Document #1

United States Department of Agriculture **Forest Service** **Wallowa-Whitman National Forest** **1550Dewey Ave. P.O. Box 907 Baker City, OR 97814**

File Code: 2770

Date: November 6, 1998

Mr. Steve Herndon
Idaho Power Company
P. 0. Box 70
Boise, ID 83707

Dear Steve,

Enclosed is the Forest Service's *Information Needs Assessment* (INA), developed to facilitate our participation in the relicensing of the Hells Canyon Dam Complex. This INA responds to my March 19 letter where I committed to provide you with a detailed description of Forest Service study requirements displaying Forest Plan direction, scope of required analysis, and related specific data needs (18 CFR Sections 168(a)(4) and 451).

The relicensing of the Hells Canyon Dam Complex involves many interrelated resource issues and will require a considerable amount of data gathering. To facilitate and expedite the Forest Service's involvement in this process, I requested our planning team to develop the INA as a means of crystallizing and tracking Forest Service resource issues and information needs. The INA will be the platform from which the Forest Service will identify license conditions and conduct the project consistency determination with our land and resource management plans.

My expectation is for Forest Service resource specialists to rely on the INA in their participation with the resource work groups. The INA is designed as a working paper to be modified as the relicensing process moves forward. I will ensure that you and your staff are provided updated copies on a periodic basis.

I will be sharing the INA with the resource work groups. It is important for other participants to understand the issues and recognize the data needs of the Forest Service in order for us to fulfill our stewardship responsibilities.

Sincerely,

KARYN L. WOOD
Forest Supervisor

Enclosure

cc: Dave Alexander, Payette National Forest
Walt Dortch, Mt. Baker Snoqualmie
Dale Torgerson, R4 Regional Office
Dam Team
Kendall Clark, HCNRA

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Document #2

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

Aesthetics (Landscape Character))

A. Issue Statement

The facilities owned and operated by Idaho Power Company (IPC) impact the landscape character of Hells Canyon. Transmission lines, substations, hatcheries, dams, distribution lines and other related structures are dominant features in the visual landscape. These facilities are not visually subordinate nor do they mimic form, line, texture, or color of existing natural features.

B. Geographic Scope of Concern

All areas from which IPC facilities are visible on Forest Service land. Views from Snake River corridor, Imnaha corridor, eastern/western rims, trails, roads, in area are all affected by facilities.

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7.
W-W Land and Resource Management Plan (FP) 1990 4-41, 4-71, 4-75
Payette National Forest Land and Resource Management Plan. 1988.
Comprehensive Management Plan
Visual Resource Inventory and Imnaha Study, EDAW
Imnaha River Wild and Scenic Management Plan, 1993, page 10
Snake River Wild and Scenic Management Plan,1998
Hells Canyon Scenic Byway Management Plan, 1993
Scenic Byways, U. S. Department of Transportation, FHWA, July 1998
Landscape Aesthetics, Agriculture Handbook #701
Payette National Forest Land and Resource Management Plan. 1988.

D. Information Needed to Analyze the Question/Issue (FS Study Needs)

Constituency analysis regarding public attitude toward views of power lines and other facilities. Photo comparison, simulations.

E. Existing Data

Visual Resource Inventory and Imnaha Study, EDAW. Sensitivity level, variety class, visual absorption capability visual management classes (HCNRA office in Enterprise)

F. Data Gaps/Study Needs

Available data is not on GIS. Constituency analysis regarding visual impacts created by IPC facilities.

G. Study Methodology/Modeling Application

Constituency analysis - photo comparison
Impacts survey - photo point study from selected viewpoints
Visual character study - sequential views from Snake River, major vehicular routes

H. Proposed IPC Studies

Scheduled to contract aesthetics study, 1999.

I. Integration with Other Forest Service Issues

IPC facilities affect other resources such as: access roads creating sediment to streams, transmission lines impeding wildlife movement.

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Rerouting segments of transmission lines to areas less obtrusive.
Screening of transmission line towers, substations, structures.
Replacement of towers with less obtrusive structures.
Siding buildings with nonreflective materials, adopt Forest Service design guidelines.
Paint buildings like colors.
Develop a design standard for buildings, signs, structures, etc.
Bury distribution lines.

M. Comments/Notes

Determination of amount of perceived impacts to the visual experience. Determine potential alternate routes.

Proposed by Donna Mattson, Enterprise
Edited by Myrna L. Evans 8/28/98, 9/22/98, 10/15/98

Document #2, continued

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

Aesthetics (Facilities)

A. Issue Statement

Idaho Power Company facilities on private lands along the reservoir from Oxbow to Hells Canyon Creek launch site impact the recreational experience of Hells Canyon. Campground facilities painted in colors that are dominant or incompatible with the natural surrounds. Managerial facilities not of like materials and are often reflective or dominant in nature. Signing is obtrusive and uncharacteristic to the recreational setting.

B. Geographic Scope of Concern

All lands that are viewed from the travel route to Hells Canyon Creek launch site.

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7.
W-W Land and Resource Management Plan (FP) 1990 4-41, 4-71, 4-75
Payette National Forest Land and Resource Management Plan. 1988.
Comprehensive Management Plan
Hells Canyon Scenic Byway Management Plan, 1993
Scenic Byways, U. S. Department of Transportation, FHWA, July 1998
Landscape Aesthetics, Agriculture Handbook #701

D. Information Needed to Analyze the Question/Issue (FS Study Needs)

Photo comparison of existing IPC facilities and HCNRA facilities. Computer simulations of existing IPC facilities modified to be more compatible with landscape character.

E. Existing Data

Photos of Hells Canyon NRA facilities (HCNRA office in Enterprise). Photos of IPC facilities (IPC headquarters, Boise, ID)

F. Data Gaps/Study Needs

There may not be recent photos of all IPC facilities.

G. Study Methodology/Modeling Application

Photo comparison

H. Proposed IPC Studies

Hells Canyon Aesthetic Study

I. Integration with Other Forest Service Issues

Recreation ROS (recreation opportunity spectrum)

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Adopt consistent design theme utilizing natural colors, textures, and forms that are more compatible with the scenic resource.

M. Comments/Notes

Proposed by Donna Mattson, Enterprise
Edited by Myrna L. Evans 8/28/98, 9/22/98, 10/15/98

Document #2, continued

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

Aesthetics (Access Routes)

A. Issue Statement

Private land developments create impacts to the scenic resources and degrade the recreational experience along the travel route from Oxbow to Hells Canyon Dam.

B. Geographic Scope of Concern

Private lands along reservoir edges and travel routes to and from reservoirs, dams, and other recreational facilities related to the Snake River.

C. Forest Service Management Direction

Hells Canyon Scenic Byway Management Plan, 1993
Scenic Byways, U. S. Department of Transportation, FHWA, July 1998
Landscape Aesthetics, Agriculture Handbook #701

D. Information Needed to Analyze the Question/Issue (FS Study Needs)

Areas of private land adjacent to reservoirs. Photo documentation of recent private land development.

E. Existing Data

Land ownership (County Courthouse; Assessors Office)

F. Data Gaps/Study Needs

Photo documentation of recent private land development.

G. Study Methodology/Modeling Applications

None needed.

H. Proposed IPC Studies

HCRC Aesthetics Study

I. Integration with other Forest Service Issues

Wildlife habitat

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

IPC acquire land to protect and enhance scenic and recreational experience along reservoir edge.

M. Notes/Comments

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Proposed by Donna Mattson, Enterprise
Edited by Myrna L. Evans 8/28/98, 9/22/98, 10/15/98
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Document #2, continued

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

Aesthetics (Scenic Outstandingly Remarkable Value)

A. Issue Statement

The operation and maintenance of the Hells Canyon Complex may be having adverse effects on the outstandingly remarkable value of scenery as described in the Draft Environmental Impact Statement for the Wild and Scenic Snake River Recreation Management Plan.

B. Geographic Scope of Concern

Wild and Scenic Snake River corridor

C. Forest Service Management Direction

W-W Land and Resource Management Plan (FP) 1990 4-41, 4-71, 4-75
HCNRA Comprehensive Management Plan
Visual Resource Inventory and Imnaha Study, EDAW
Snake River Wild and Scenic Management Plan, 1994, revised 1998
Landscape Aesthetics, Agriculture Handbook #701

D. Information Needed to Analyze the Question/Issue

Constituency analysis regarding public attitude toward views of foreground resources and losses of sand beaches and vegetation.

E. Existing Data

Visual Resource Inventory and Imnaha Study, EDAW. Sensitivity level, variety class, visual absorption capability visual management classes (HCNRA office in Enterprise)

F. Data Gaps/Study Needs

Available data is not on GIS. Constituency analysis regarding visual impacts created by IPC facilities.

G. Study Methodolgy/Modeling Application

Constituency analysis - photo comparison
Impacts survey - photo point study from selected viewpoints
Visual character study - sequential views from Snake River, major vehicular routes

H. Proposed IPC Studies

Scheduled to contract aesthetics study, 1999.

I. Integration with Other Forest Service Issues

Recreation and sedimentation surveys.

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Rerouting segments of transmission lines to areas less obtrusive. Screening of transmission line towers, substations, structures. Replacement of towers with less obtrusive structures. Siding buildings with nonreflective materials, adopt Forest Service design guidelines. Paint buildings like colors. Develop a design standard for buildings, signs, structures, etc. Bury distribution lines.

M. Comments/Notes

Created by Donna Mattson, Enterprise
Edited by Myrna L. Evans 8/28/98, 10/15/98

Document #3

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

Aquatic Habitat And Bull Trout Population Dynamics

A. Issue Statement

The effects of the Hells Canyon Complex on bull trout viability in the Snake River and its tributaries.

Objective

Sustain/enhance native (wild) runs of fluvial and resident bull trout on National Forest System lands.

Questions

Within Complex
1. Relative abundance, age, size, and distribution of bull trout?
2. What are the effects of reservoir drawdowns on resident fish habitat?
3. Can fish access tributary habitat with reservoir drawdown fluctuations, fluctuating mainstem river levels, and the slope of debris fans?
4. Interaction between native and introduced resident fish species in the reservoirs?
5. How have bull trout genetic interactions changed with the completion of HCC?
6. What are the effects of changes to the bull trout food chain with the loss of anadromous fish runs?
7. Do bull trout utilize the reservoirs and for what part of their life cycle?

Mainstem Snake River and Tributaries Below Hells Canyon Dam
1. Relative abundance, age, size, and distribution of bull trout.
2. What are the effects of flow fluctuations and changes in water temperatures on bull trout in the mainstem of the Snake River and tributaries below Hells Canyon Dam?
3. What are the habitat conditions for bull trout and other native species of the mainstem of the Snake River below Hells Canyon Dam?
4. What are the habitat conditions of the tributaries above and below Hells Canyon Dam?
5. Can fish access tributary habitat with reservoir drawdown fluctuations, fluctuating mainstem river levels. and the slope of debris fans?
6. When do bull trout utilize the mainstem of the Snake River?

B. Geographic Scope of Concern

Weiser River through the complex to the Grande Ronde River, including Imnaha River, Salmon River, and unnamed tributaries.

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, Section 7.

1982 CMP, page 4. Revised Recreation Section: "Continue to encourage IPC to maintain higher than licensed minimum flows and moderate release rates in recognition of both fisheries and recreation values.

Note: This working document tracks methods used to determine Forest Plan consistency and P ME needs. It is subject to change based on new information, data collection, analysis, etc. Please contact responsible resource specialist to ensure most recent version

1982 CMP, page 19. Water and Soils: "Maintain or enhance the present level of water quality and soil productivity.

1982 CMP, page 13. Fisheries: "Maintain and protect fish habitat through careful resource management and recreation development. Provide opportunities for visitors to enjoy NRA fisheries while maintaining high quality fish habitat.

Wallowa-Whitman National Forest Plan standards and guidelines: page 4-30. (1) "To protect and manage habitat for the perpetuation and recovery of plants and animals which are listed as threatened, endangered, or sensitive..."; page 4-22 (1) "Give management and enhancement of water quality, protection of watercourses and streamside management units and fish habitat priority over uses described or implied in all other management standards and guidelines". (12) "Alter watershed conditions only to the extent that aquatic and riparian goals will still be met and other valid water uses, such as irrigation, will not be adversely affected..." (32) Protect instream flow on National Forest System lands through critical analysis of proposed water uses ..."; page 432. (4) "Recognize existing hydropower withdrawals to the extent required by law. (5) "Encourage hydropower production unless precluded or further limited by specific management area direction ..."

PACFISH/INFISH: Riparian Goals and Objectives (LRMP Amendment).

Snake River Wild and Scenic River Plan: Desired Future Conditions, page I-7 to I-9.

1998 Upper Columbia and Snake River ESU Biological Opinion (1998): Mechanism 4 states that the Forest Service shall maximize use of 4(e) authority to protect critical habitat from activities associated with laws than may conflict with the Endangered Species Act (ESA).

USDA Forest Service. 1988. Payette National Forest Land and Resource Management Plan. **Desired Future Condition For Fish Habitat:** The present overall condition of fish habitat capability in drainages with salmon and steelhead will be improved by limiting sediment production and investing in fish habitat and watershed improvement and erosion control on roads. Resident fish habitat is expected to be maintained in present condition in drainages upstream from Hells Canyon Dam (page IV-41). Standards And Guidelines For Fish Habitat Management: Ensure that protection is provided for streams, streambanks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment (page IV-42). **Standards And Guidelines For Fish Habitat Management:** Recognize fish habitat requirements and values coequally with other National Forest System resources and uses when permitting hydropower development (page IV-42). InterAgency Cooperation And Coordination: Maintain close liaison with the Idaho Department of Fish and Game, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and other participating agencies and Indian tribes in the resotration and enhancement of Idaho's anadromous fish resource (page IV-42). **Desired Future Condition For Riparian Areas** : Riparian areas of the future on the Payette National Forest will exhibit an improving trend where recovery of degraded conditions is possible and will be protected where they are now in good condition. Management decisions will be made in favor of riparian dependent resources where conflicts exist with man's use (page IV-91). **Standards And Guidelines For Riparian Areas:** Actions within or affecting riparian areas will include protection and, where applicable, improvement of dependant resources. Other resource uses and activities will occur to the extent they support or do not adversely affect the maintenance of resources. Preferential consideration is given to riparian-dependant resources over other resources and activities when conflicts occur. (p. IV-95)

D. Information Needed to Analyze the Issue/Questions

Within the Complex
Relative size and distribution of bull trout.
Population numbers and trends.
Habitat condition surveys on the tributaries, including identification of limiting factors.
Carp/small mouth bass and bull trout interactions within a regulated system.

Snake River and Tributaries below Hells Canyon Dam
Relative size and distribution of bull trout
Population numbers and trends.
Mainstem Determine the percent of time fluvial fish spend in the mainstem versus the tributaries. Correlate the percent of time spent in the mainstem and the tributaries with water temperatures. Correlate the percent of time spent in the mainstem and the tributaries with flow and flow fluctuations.

Habitat condition surveys on the tributaries (Salmon River, Grande Ronde River, Imnaha River, Big Sheep Creek, perennial tributaries to Snake River below Hells Canyon Dam).

E. Existing Data

Forest Service stream surveys for the Imnaha River and Grande Ronde tributaries (USFS - Wallowa Mountain
Office, National Forest Headquarters)

Idaho Department of Fish & Game (IFG) and Oregon Department of Fish & Wildlife (ODFW) Stream Surveys?
(Oregon and Idaho state agencies)

National Marine Fisheries Service (NMFS), IFG, ODFW population and trend information (agencies)

F. Data Gaps/Study Needs

Relative distribution, abundance information, and habitat use both within the complex, below the complex, and within the tributaries.

G. Study Methodology/Modeling Application

Tributary Stream Surveys - Use USFS Region 6 stream survey protocol and proper functioning condition (PFC) methodology
Paired study for bull trout interactions: Compare population distribution, population trends, habitat use within the Imnaha River with a tributaries above the complex; e.g., Pine Creek, Indian Creek
Mainstem below Hells Canyon Dam: hook and line large fluvial fish: genetics Mainstem below Hells Canyon Dam: radio tag Imnaha fish: movement and interactions
Capture and radio tag bull trout adults and juveniles at ODFW, IFG, and Tribal salmon traps Instream flow modeling habitat suitability curves should be reviewed by the aquatics working group (at minimum).

H. Proposed Idaho Power Studies

Study 8.1.10: Status, Distribution, and Limiting Factors of Redband and Bull Trout Associated with the Hells Canyon Complex (IPC)

I. Integration with Other Forest Service Issues

Crappie and small mouth bass issue
Flow issue
Terrestrial food chain issues
Mollusk/Macro-invertebrate studies
Economic analysis
Anadromous fish issue

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

Note: This working document tracks methods used to determine Forest Plan consistency and PME needs. It is subject to change based on new information, data collection, analysis, etc. Please contact responsible resource specialist to ensure most recent version.

K. Forest Plan Consistency Determination (Record *of* consistency *of* IPC proposals with FS management direction upon completion *of* data collection and analysis *of* proposed action)

L. Potential Protection, Mitigation, and Enhancement Measures (Potential *PME* measures that may lead to terms and conditions *of* a new license)

M. Comments/Notes

Technical feasibility of retrofitting dams for fish passage. Bull trout populations have been documented in Indian Creek and Pine Creek. Bull trout use in Wildhorse Creek is unknown. Possibility of re-introducing

adfluvial strain of Bull Trout into Brownlee, Oxbow, or Hells Canyon Pools to broaden the gene pool if habitat exists. With habitat fragmentation, fish runs are more dependent on tributary systems and remaining sections of the Snake River.

Created: 6/5/98
Edited: 6/15/98, 8/12/98
By: Terry Carlson, John Anderson, Dave Kennell, Dean Grover, Kevin Meyers

Edited by Myrna Evans 8/21/98, 9/21/98, 10/15/98

Document #4

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forest

November 6, 1998

INFORMATION NEEDS ASSESSMENT

Flow Fluctuations Related To Dam Operations

A. Issue Statement

How changes in flow regimes from dam operations are altering the aquatic resource (both physical and biological) and river use below Hells Canyon Dam and within the complex.

Objective

To provide a flow regime which maintains/enhances the desired physical (channel morphology) and biological characteristics (species viability/recovery), and river use of the Snake River Canyon below Hells Canyon Dam.

Questions to Answer

Biological

1. Are flow fluctuations stranding fish below Hells Canyon Complex?
2. Are flow fluctuations stranding redds below Hells Canyon Complex, in reservoirs, in tributaries?
3. How do changes in river velocity and depths, caused by flow fluctuations, effect biological activity?
4. How have flow fluctuations effected the riparian communities along the river?

Sediment Transport

1. How do flow fluctuations, daily and annually effect beach erosion?
2. At what flow does terrace erosion begin?

Flow Regimes

How does current flow regime differ from pre-dam flow regime?

Recreation/Other Uses

1. What have been/are the effects of changing flow regimes on recreation use (boating and trails) of the river?
2. What are the safety concerns resulting from daily flow fluctuations?
3. Is it possible to change operations of Hells Canyon Complex given the diverse uses and administration of the entire Snake River Basin?

B. Geographic Scope of Concern

From Brownlee inflow through the complex and Hells Canyon.

C. Forest Service Management Direction

Hells Canyon National Recreation Act, section 7.

1982 CMP, page 4. Revised Recreation Section: "Continue to encourage IPC [Idaho Power Company] to maintain higher than licensed minimum flows and moderate release rates in recognition of both fisheries and recreation values.
1982 CMP, page 19. Water and Soils: "Maintain or enhance the present level of water quality and soil productivity.
1982 CMP, page 13. Fisheries: "Maintain and protect fish habitat through careful resource management and recreation development. Provide opportunities for visitors to enjoy NRA fisheries while maintaining high quality fish habitat.
Wallowa-Whitman National Forest Plan Standards and Guidelines: page 4-22. (1) "Give management and enhancement of water quality, protection of watercourses and streamside management units and fish habitat priority over uses described or implied in all other management standards and guidelines". (12) "Alter watershed conditions only to the extent that aquatic and riparian goals will still be met and other valid water uses, such as irrigation, will not be adversely affected ...". (32) Protect instream flow on National Forest System lands through critical analysis of proposed water uses ...". page 4-32. (4) "Recognize existing hydropower withdrawals to the extent required by law. (5) "Encourage hydropower production unless precluded or further limited by specific management area direction ...".
PACFISH/INFISH: Riparian Goals and Objectives.
Snake River Wild and Scenic River Plan: Desired Future Conditions pages I-7 to I-9.

USDA Forest Service. 1988. Payette National Forest Land and Resource Management Plan. **Standards and Guidelines for Fish Habitat Management:** Ensure that protection is provided for streams, streambanks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment (page IV-42). **Standards and Guidelines for Fish Habitat Management:** Recognize fish habitat requirements and values coequally with other National Forest System resources and uses when permitting hydropower development (page IV-42). **Inter-Agency Cooperation And Coordination:** Maintain close liaison with the Idaho Department of Fish and Game, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and other participating agenmcies and Indian tribes in the resotration and enhancement of Idaho's anadromous fish resource (page IV-42). **Desired Future Condition for Soil and Water**: Water quality will meet State standards (page IV-70). **Standards and Guidelines for Soil and Water, Water Quality Management:** Meet or exceed Idaho Water Quality Standards for the protection of beneficial uses (page IV-71). **Standards and Guidelines for Soil and Water, Soil and Water Resource Investigations:** Evaluate and respond to application for hydropower, water diversion, water storage, and other water-related facilities on a case by case basis. Provide timely comments to the Federal Energy Regulatory Commission (FERC) or to the appropriate State agency. The potential direct, indirect, and cumulative effects of proposed projects will be evaluated. Recommendations to FERC or other agencies shall be based on Forestwide and Management Area goals as stated in this Plan, and the results of more specific analysis at the project level. Applicants may be required to use private consultants or their own personnel to make environmental evaluation needed by the Forest Service and/or State agencies, Close coordination with other agencies will be promoted during this process (page IV-78). **Standards and Guidelines for Soil and Water, Water Rights and Uses:** Protect the water needed to successfully accomplish the programs mandated by Federal legislation and Executive Orders, including the Organic Administration Act, the Multiple-Use Sustained-Yield Act, the National Forest Management Act, Indian Treaty Rights, etc. (page IV-82). The United States has Federal reserved water rights for timber and watershed management, including instream flows necessary to secure favorable conditions of water flow, as

mandated by the Organic Administration Act of 1897 (page IV-83). Instreamflows may be asserted in order to carry out the specific purposed of the Wild and Scenic Rivers Act, the Wilderness Act, the Endangered Species Act, and other similar Federal legislation and Executive Orders. (p. IV-83). The Federal Power Act authorizes the Secretary of Agriculture to condition occupancy to protect the purposes for which the land was reserved (page IV-83). **Desired Future Condition for Riparian Areas:** Riparian areas of the future on the Payette National Forest will exhibit an improving trend where recovery of degraded conditions is possible and will be protected where they are now in good condition. Management decisions will be made in favor of riparian dependent resources where conflicts exist with man's use (page IV-91). **Standards and Guidelines for Riparian Areas:** Actions within or affecting riparian areas will include protection and, where applicable, improvement of dependant resources. Other resource uses and activities will occur to the extent they support or do not adversely affect the maintenance of resources. Preferential consideration is given to riparian-dependant resources over other resources and activities when conflicts occur (page IV-95).

D. Information Needed to Analyze the Questions/Issues

Current System Operation Constraints

Analysis of all existing system operation constraints (flood control, NMFS constraints, etc.) throughout the system. Is there flexibility to alter operations?

Biological

Analysis of aquatic habitat needs vs availability: Literature Search, Time Series analysis with habitat parameters and flows as variables.

Sediment Regimes

Time Series analysis with flows and beach erosion as variables.

Flow Regimes

Basic hydrologic study of the basin: Pre and Post dam time series analysis and hydrographs, Bureau of Reclamation Dam Studies (Dave Wagner, Northern Arizona University), Literature Search, compilation of existing data.

Recreation and Other Uses

Analysis of options for the operation of Hells Canyon Complex: Literature Search of existing settlement agreements and license constraints.
Time series analysis with floater and flows and boaters and flows as variables.

E. Existing Data

Bureau of Reclamation Dam Studies (Dave Wagner, Northern Arizona University)
Historic Snake River records (USGS, IPC).
Brownlee Inflow records (USGS, IPC)
Oxbow, Hells Canyon Dam outflow records (IPC)

F. Data Gaps/Study Needs

Unknown. No study plan has been reviewed.

G. Study Methodology/Modeling Application

Compilation and summary of existing data.
Time series analysis

H. Proposed Idaho Power Studies

In the development phase.

I. Integration with Other Forest Service Issues

Recreation Issues
Heritage Resource Issues
Sediment Issues
Riparian Community Issues
Fisheries/Aquatic Habitat

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Change in complex operations.

M. Notes/Comments

Minimum instream flows as required by NMFS, other agencies, settlements
River Recreation (one boat operator thought safe power boat operation range = 8,500-30,000cfs. Minimum is 8,000cfs, Max is 65,000cfs).
Constraints: Power generation, Flood control, Navigation, Irrigation
Wild and Scenic Rivers Act
PL 94-199 section 6b
Recreation evolved around minimum flows, may not want to change flow regime.
Pre-dam, change in discharge over 6 hours = 250-500 cfs.
Post dam, change in discharge over 6 hours = 11,950-12,070 cfs on a daily basis (Grams and Schmidt)

Created: 5/7/98
Edited: 5/14/98, 6/5/98, 8/12/98
By Terry Carlson, Dean Grover, Kevin Meyers

Edited by Myrna L. Evans 8/21/98, 9/21/98, 10/15/98

Document #5

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests
November 6, 1998
INFORMATION NEEDS ASSESSMENT

Game Fish

A. Issue Statement

The effects of crappie and small mouth bass on the viability of native fish species below Hells Canyon Dam.

Questions to Answer
1. What are crappie and small mouth bass numbers in the Snake River below Hells Canyon Dam?
2. Are the numbers of game fish a limiting factor for fall chinook distribution/survival?
3. Do dam operations provide temperature regimes which favor crappie and small mouth bass?
4. Do dam operations provide crappie and small mouth bass recruits which would otherwise not reproduce in the
   Snake River below the HCC?

B. Geographic Scope of Concern

Hells Canyon Dam to the Grande Ronde River

C. Forest Service Management Direction

1982 CMP, page 4. Revised Recreation Section: "Continue to encourage IPC [Idaho Power Company] to maintain higher than licensed minimum flows and moderate release rates in recognition of both fisheries and recreation values.

" 1982 CMP, page 13. Fisheries: "Maintain and protect fish habitat through careful resource management and recreation development. Provide opportunities for visitors to enjoy NRA fisheries while maintaining high quality fish habitat." Wallowa-Whitman National Forest Plan Standards and Guidelines: page 4-30. (1) "To protect and manage habitat for the perpetuation and recovery of plants and animals which are listed as threatened, endangered, or sensitive..." page 4-22 (1) "Give management and enhancement of water quality, protection of water courses and streamside management units and fish habitat priority over uses described or implied in all other management standards and guidelines". (12) "Alter watershed conditions only to the extent that aquatic and riparian goals will still be met and other valid water uses, such as irrigation, will not be adversely affected ..." (32) Protect instream flow on National Forest System lands through critical analysis of proposed water uses ..." page 4-32. (4) "Recognize existing hydropower withdrawals to the extent required by law." (5) "Encourage hydropower production unless precluded or further limited by specific management area direction ..." PACFISH/INFISH: Riparian Goals and Objectives (LRMP Amendment).

Snake River Wild and Scenic River Plan: Desired Future Conditions page I-7 to I-9. 1998 Upper Columbia and Snake River ESU Biological Opinion (1998): Mechanism 4 states that the FS shall maximize use of 4(e) authority to protect critical habitat from activities associated with laws than may conflict with ESA.
USDA Forest Service. 1988. Payette National Forest Land and Resource Management Plan. **Desired Future Condition For Fish Habitat:** The present overall condition of fish habitat capability in drainages with salmon and steelhead will be improved by limiting sediment production and investing in fish habitat and watershed improvement and erosion control on roads. Resident fish habitat is expected to be maintained in present condition in drainages upstream from Hells Canyon Dam (page IV-41). **Standards And Guidelines For Fish Habitat Management:** Ensure that protection is provided for streams, streambanks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment (page IV-42). Recognize fish habitat requirements and values coequally with other National Forest System resources and uses when permitting hydropower development

(page IV-42). Fish passage will be restored where Forest Service authorized or conducted construction has impaired it, except where the habitat made available would be insignificant or inconsequential, based on a determination of a journey fisheries scientist. Fish passage will be reviewed during all new or proposed construction activities in or near streams, Where fish passage occurs it will not be impaired. If fish passage is inadvertently impaired, during future actions it will be restored, Water storage reservoirs, presently in existence are exempted from these requirements (page IV-42). **InterAgency Cooperation And Coordination:** Maintain close liaison with the Idaho Department of Fish and Game, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and other participating agencies and Indian tribes in the restoration and enhancement of Idaho's anadromous fish resource (page IV-42). Desired Fu**ture Condition For Riparian Areas:** Riparian areas of the future on the Payette National Forest will exhibit an improving trend where recovery of degraded conditions is possible and will be protected where they are now in good condition. Management decisions will be made in favor of riparian dependent resources where conflicts exist with man's use (page IV-91). **Standards And Guidelines For Riparian Areas:** Actions within or affecting riparian areas will include protection and, where applicable, improvement of dependant resources. Other resource uses and activities will occur to the extent they support or do not adversely affect the maintenance of resources. Preferential consideration is given to riparian-dependant resources over other resources and activities when conflicts occur (page IV95).

D. Information Needed to Analyze the Question/Issue

Distribution, number, and life cycles of crappie and small mouth bass in the Snake River below Hells Canyon Dam

E. Existing Data

Idaho and Oregon Departments of Fish and Game surveys (agency)

F. Data Gaps/Study Needs

Crappie and small mouth bass distribution and populations on the Snake River below Hells Canyon Dam

G. Study Methodology/Modeling Application

Instream flow/temperature study comparing WUA curves for game fish vs native salmonids

H. Proposed IPC Studies

Study 8.1.11: Hells Canyon Complex Resident Fish Study Plan

I. Integration with Other Forest Service Issues

Anadromous fish

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Change operation and flows
Change temperature releases from the dams

M. Notes/Comments

Created: 6/4/98, Edited: 6/15/98 By: Terry Carlson, John Anderson, Dave Kennell
Edited by Myrna L. Evans 8/27/98, 9/21/98, 10/15/98

Document #6

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ANALYSIS

Lamprey Below Hells Canyon Dam

A. Issue Statement

The effects the Hells Canyon Complex on lamprey viability in the Snake River.

Questions to Answer

1. What are lamprey populations and relative distribution in the Snake River below Hells Canyon Dam, the Salmon River, Imnaha River, and Grande Ronde River?
2. How do flow fluctuations, water temperatures, and the loss of sand substrate affect lamprey life stages when they are in the river systems?

B. Geographic Scope of Concern

Hells Canyon Dam to the Grande Ronde River

C. Forest Service Management Direction

1982 CMP, page 4. Revised Recreation Section: "Continue to encourage IPC [Idaho Power Company] to maintain higher than licensed minimum flows and moderate release rates in recognition of both fisheries and recreation values."
1982 CMP, page 19. Water and Soils: "Maintain or enhance the present level of water quality and soil productivity."
1982 CMP, page 13. Fisheries: "Maintain and protect fish habitat through careful resource management and recreation development. Provide opportunities for visitors to enjoy NRA fisheries while maintaining high quality fish habitat."
Wallowa-Whitman National Forest Plan Standards and Guidelines: page 4-30. (1) "To protect and manage habitat for the perpetuation and recovery of plants and animals which are listed as threatened, endangered, or sensitive...". page 4-22 (1) "Give management and enhancement of water quality, protection of watercourses and streamside management units and fish habitat priority over uses described or implied in all other management standards and guidelines". (12) "Alter watershed conditions only to the extent that aquatic and riparian goals will still be met and other valid water uses, such as irrigation, will not be adversely affected ...". (32) Protect instream flow on National Forest System lands through critical analysis of proposed water uses ...". page 4-32. (4) "Recognize existing hydropower withdrawals to the extent required by law. (5) "Encourage hydropower production unless precluded or further limited by specific management area direction ...".
PACFISH/INFISH: Riparian Goals and Objectives (LRMP Amendment).
Snake River Wild and Scenic River Plan: Desired Future Conditions pages I-7 to I-9.
(Wallowa-Whitman National Forest LRMP: Civil Rights page 4-18 (6) Ceded lands. Cultural significance of the lamprey to Native Americans and our trust responsibility.

D. Information Needed to Analyze the Question/Issue

Relative distribution and population numbers for lamprey below Hells Canyon Dam, including the mainstem of the Snake River, Salmon River, Imnaha River, and Grande Ronde River.

E. Existing Data

Idaho and Oregon Departments of Fish and Game/Wildlife surveys (agency)
NMFS (agency)
Tribes

F. Data Gaps/Study Needs

Lamprey relative distribution and population on the Snake River below Hells Canyon Dam, the Salmon River, the Imnaha River, and the Grande Ronde River.

G. Study Methodology/Modeling Application

H. Proposed IPC Studies

No study proposed.

I. Integration with Other Forest Service Issues

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Anadromous fish

M. Notes/Comments

Tribal issue - the Tribe has petitioned for listing.
Historically within the system
Lampreys are a nutrient source for fresh water systems from ocean source.

Created: 6/4/98
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By: Terry Carlson, John Anderson, Dave Kennell, Dean Grover, Kevin Meyers

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Document #7

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ANALYSIS

Macroinvertebrate and Mollusks

A. Issue Statement

The effects of dam operations on macroinvertebrate and mollusk viability within the Snake River throughout the project area.

Questions

1. What are the affects of flow fluctuations on macroinvertebrate and mollusk populations?
2. Do current population levels and species mix provide a food base for the river system?
3. Do current operations maintain/enhance biodiversity of the aquatic ecosystem?

B. Geographic Scope of Concern

Brownlee inlet to Grande Ronde River.

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7.
1982 CMP, page 13. Fisheries: "Maintain and protect fish habitat through careful resource management and recreation development. Provide opportunities for visitors to enjoy NRA fisheries while maintaining high quality fish habitat."
Wallowa-Whitman National Forest Plan Standards and Guidelines: page 4-30. (1) "To protect and manage habitat for the perpetuation and recovery of plants and animals which are listed as threatened, endangered, or sensitive..." page 4-22 (1) "Give management and enhancement of water quality, protection of watercourses and streamside management units and fish habitat priority over uses described or implied in all other management standards and guidelines." (12) "Alter watershed conditions only to the extent that aquatic and riparian goals will still be met and other valid water uses, such as irrigation, will not be adversely affected ..." (32) Protect instream flow on National Forest System lands through critical analysis of proposed water uses ..." page 4-32. (4) "Recognize existing hydropower withdrawals to the extent required by law." (5) "Encourage hydropower production unless precluded or further limited by specific management area direction ..."
PACFISH/INFISH: Riparian Goals and Objectives (LRMP Amendment).
Snake River Wild and Scenic River Plan: Desired Future Conditions, pages I-7 to I-9.
USDA Forest Service. 1988. Payette National Forest Land and Resource Management Plan.
Desired Future Condition for Fish Habitat: The present overall condition of fish habitat capability in drainages with salmon and steelhead will be improved by limiting sediment production and investing in fish habitat and watershed improvement and erosion control on roads. Resident fish habitat is expected to be maintained in present condition in drainages upstream from Hells Canyon Dam (page IV-41). **Standards and Guidelines for Fish Habitat Management:** Ensure that protection is provided for streams, streambanks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperatures, blockages

of water courses, and deposits of sediment (page IV-42). Recognize fish habitat requirements and values coequally with other National Forest System resources and uses when permitting hydropower development (page IV-42). Fish passage will be restored where Forest Service authorized or conducted construction has impaired it, except where the habitat made available would be insignificant or inconsequential, based on a determination of a journey fisheries scientist. Fish passage will be reviewed during all new or proposed construction activities in or near streams, Where fish passage occurs it will not be impaired. If fish passage is inadvertently impaired, during future actions it will be restored, Water storage reservoirs, presently in existence are exempted from these requirements (page IV-42). **Inter-Agency Cooperation and Coordination:** Maintain close liaison with the Idaho Department of Fish and Game, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and other participating agencies and Indian tribes in the restoration and enhancement of Idaho's anadromous fish resource (page IV-42). **Desired Future Condition for Soil and Water:** Water quality will meet State standards (page IV-70). **Standards And Guidelines for Soil and Water, Water Quality Management**: Meet or exceed Idaho Water Quality Standards for the protection of beneficial uses (page IV-71). **Standards And Guidelines for Soil and Water:** The United States has Federal reserved water rights for timber and watershed management, including instream flows necessary to secure favorable conditions of water flow, as mandated by the Organic Administration Act of 1897 (page IV-83). **Desired Future Condition for Riparian Areas:** Riparian areas of the future on the Payette National Forest will exhibit an improving trend where recovery of degraded conditions is possible and will be protected where they are now in good condition. Management decisions will be made in favor of riparian dependent resources where conflicts exist with man's use (page IV-91). **Standards And Guidelines For Riparian Areas:** Actions within or affecting riparian areas will include protection and, where applicable, improvement of dependant resources. Other resource uses and activities will occur to the extent they support or do not adversely affect the maintenance of resources. Preferential consideration is given to riparian-dependant resources over other resources and activities when conflicts occur (page IV-95).

D. Information Needed to Analyze the Issue/Questions

Macroinvertebrate and mollusk population, species mix, and distribution.
Effects of river fluctuations on macroinvertebrate and mollusk populations.
Comparison of the benthic community immediately below the complex with that downstream of the Salmon River.

E. Existing Data

Idaho Department of Fish & Game (IFG) and Oregon Department of Fish & Wildlife (ODFW) stream surveys Idaho and Oregon state agencies
IPC studies (Idaho Power Company)

F. Data Gaps/Study Needs

Under what flow regime will habitat types be defined (Study 8.1.12)?
Coordinate data needs of Study 8.1.12 with study requests from terrestrial group.

G. Study Methodology/Modeling Application

H. Proposed IPC Studies

Study 8.1.12: Benthic Macro-invertebrates

I. Integration with Other Forest Service Issues

Game fish issue
Flow Issue
Terrestrial food chain issues
Mollusk/Macro-invertebrate studies
Anadromous fish issue

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Anadromous fish

M. Notes/Comments

Tribal issue - the Tribe has petitioned for listing.
Historically within the system
Lampreys are a nutrient source for fresh water systems from ocean source.

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Document #8

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

Sediment Routing and Regime

A. Issue Statement

The Hells Canyon Complex and associated dam operations have resulted in altered flows and reduced sediment downstream from Hells Canyon Dam which affects beach and terrace erosion, aquatic and riparian habitat, recreation opportunities, and cultural resources.

Objective: To provide a flow and sediment regime which maintains/enhances the desired physical (channel morphology) and biological (species viability/recovery) characteristics of the Snake River Canyon below Hells Canyon Dam.

Questions

Riparian Communities:
1. How have changes in sediment regimes and loss of sand bar habitat affected the riparian community?
2. Has there been a loss of fine growing substrate due to sediment capture behind the dams?

Sediment Budget/Sediment Transport/Sand Bars:
1. Are flow fluctuations and changes in sediment transport eroding sand bars and terraces and what is the rate of erosion?
2. Do tributary channels below Hells Canyon Dam provide adequate recruitment of spawning gravels or sand for sand bar renewal?
3. How do flow fluctuations and changes in sediment transport affect gravel recruitment?
4. At what flow does terrace erosion begin?
5. Are there changes in dam operations that can be implemented to slow that rate of sand bar loss and terrace erosion?
6. What is the sediment budget inflow and outflow to the Hells Canyon Complex?
7. How much beach has been lost since the construction on the Hells Canyon Complex dams?
8. What is the predicted rate of beach and terrace erosion in the future?
9. Characterize the particle size distribution of the sediment load below Hells Canyon Dam before and after dam construction.

Recreation and Other Uses:
1. How have changes in sediment regimes and loss of sand bars affected recreation use in the river corridor?
2. Is sand bar loss shifting recreation use to adjacent terraces?
3. If there is a shift in recreation use, how is this affecting heritage resources along the river?
4. What have been the visual effects of sand bar erosion?

B. Geographic Scope of Concern

Brownlee inflow through the complex to the Grande Ronde River, include tributaries to Brownlee, Oxbow, and Hells Canyon reservoirs, as well as the mainstem Snake River.

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7.

USDA Forest Service. 1990. Wallowa-Whitman National Forest Plan. **Standards and Guidelines**: page 4-22. (1) "Give management and enhancement of water quality, protection of watercourses and streamside management units and fish habitat priority over uses described or implied in all other management standards and guidelines." (12) "Alter watershed conditions only to the extent that aquatic and riparian goals will still be met and other valid water uses, such as irrigation, will not be adversely affected ..." "Recognize existing hydropower withdrawals to the extent required by law." (5) "Encourage hydropower production unless precluded or further limited by specific management area direction ..."
PACFISH/INFISH: Riparian Goals and Objectives (Amendment to LRMP).
Snake River Wild and Scenic River Plan. Desired Future Conditions, pages I-7 to I-9.
Clean Water Act and State of Oregon and Idaho Water Quality Regulations.
USDA Forest Service. 1988. Payette National Forest Land and Resource Management Plan. **Desired Future Condition for Fish Habitat:** The present overall condition of fish habitat capability in drainages with salmon and steelhead will be improved by limiting sediment production and investing in fish habitat and watershed improvement and erosion control on roads. Resident fish habitat is expected to be maintained in present condition in drainages upstream from Hells Canyon Dam (page IV-41). **Standards and Guidelines for Fish Habitat Management:** Ensure that protection is provided for streams, streambanks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment (page IV-42). Recognize fish habitat requirements and values coequally with other National Forest System resources and uses when permitting hydropower development (page IV-42). **Inter-Agency Cooperation and Coordination:** Maintain close liaison with the Idaho Department of Fish and Game, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and other participating agencies and Indian tribes in the restoration and enhancement of Idaho's anadromous fish resource (page IV-42). **Desired Future Condition for Soil and Water:** Water quality will meet State standards (page IV-70). **Standards and Guidelines for Soil and Water, Water Quality Management:** Meet or exceed Idaho Water Quality Standards for the Protection of Beneficial uses (page IV-71). **Standards and Guidelines for Soil And Water, Soil and Water Resource Investigations:** Evaluate and respond to application for hydropower, water diversion, water storage, and other water-related facilities on a case by case basis. Provide timely comments to the Federal Energy Regulatory Commission (FERC) or to the appropriate State agency. The potential direct, indirect, and cumulative effects of proposed projects will be evaluated. Recommendations to FERC or other agencies shall be based on Forest-wide and Management Area goals as stated in this Plan, and the results of more specific analysis at the project level. Applicants may be required to use private consultants or their own personnel to make environmental evaluation needed by the Forest Service and/or State agencies, Close coordination with other agencies will be promoted during this process (page IV-78). **Water Rights and Uses:** Protect the water needed to successfully accomplish the programs mandated by Federal legislation and Executive Orders, including the Organic Administration Act, the Multiple-Use Sustained-Yield Act, the National Forest Management Act, Indian Treaty Rights, etc. (page IV-82). The United States has Federal reserved water rights for timber and watershed management, including instream flows necessary to secure favorable conditions of water flow, as mandated by the Organic Administration Act of 1897 (page IV-83). Instream flows may be asserted in order to carry out the specific purposed of the Wild and Scenic Rivers Act, the Wilderness Act, the Endangered Species Act, and other similar Federal legislation and Executive Orders (page IV-83). The Federal Power Act authorizes the Secretary of Agriculture to condition occupancy to protect the purposes for which the land was reserved (page IV-83). **Desired Future Condition for Riparian Areas:** Riparian areas of

the future on the Payette National Forest will exhibit an improving trend where recovery of degraded conditions is possible and will be protected where they are now in good condition. Management decisions will be made in favor of riparian dependent resources where conflicts exist with man's use (page IV-91). **Standards and Guidelines for Riparian Areas:** Actions within or affecting riparian areas will include protection and, where applicable, improvement of dependant resources. Other resource uses and activities will occur to the extent they support or do not adversely affect the maintenance of resources. Preferential consideration is given to riparian-dependant resources over other resources and activities when conflicts occur (page IV-95).

D. Information Needed to Analyze the Question/Issue

Changes and rate of change in sand bars and terraces since closure of Hells Canyon complex or at a minimum 1975 (W&S river designation).
Change and rate of change in channel morphology since closure of Hells Canyon complex or at a minimum 1975 (W&S river designation).
Characterization of pre and post dam construction sediment budgets, including tributaries.
A literature search of articles which deal with sediment passage through dams, including mitigations, enhancements, and solutions.

E. Existing Data

Air Photos from the 1950s to present. (USFS office, Enterprise)
USGS sediment studies along the Snake River. (USGS Office)
Grams and Schmidt Study, 1991. (Publication)
Gordon Grant, Research Hydrologist, USFS PNW, Corvallis, Or. (Is conducting a sediment and channel geomorphology study on the Deschutes River).
Extrapolated empirical data on sediment loads (USGS, IPC)

F. Data Gaps/Study Needs

Below Hells Canyon Dam

Riparian Communities:
Spawning Gravels: Change in particle size distribution along the river corridor. Compare size distribution above and below the Salmon River.
Spawning Gravels: Evaluation of gravel sources, quality in the mainstem of the Snake River below Hells Canyon dam.
Riparian Habitat: Percent change in distribution, pre-dam to current if information is available, at a minimum since 1975 (W&S river designation)

Sediment Transport/Beach Erosion:
Sediment Balance Study: Characterize the sediment (particle size distribution) being deposited in tributary reservoirs as well as Brownlee, Oxbow, Hells Canyon reservoirs. Estimate sediment loads for the Salmon River at mouth and the Snake River upstream of the Salmon River. Provide a brief discussion of the pre-dam erosion/deposition processes within the Snake River flood plain.
Sand bar distribution/change, pre-dam to current. Specifically look at 1) percent of the canyon with sand bars and/or hydrology capable of creating/maintaining sand bars (i.e., what is the percent of the canyon with bedrock vs the percent of the canyon with terraces, flood plains, sand bars); 2) percent change in sand bars since 1950s (or as far back as air photos allow); 3) correlate the changes in bars to the annual flows to determine at what flows bar erosion occurs; 4) percent change in terrace area (erosion rate) since the 1950s; 5) flows at which sand bar and terrace erosion occurs; 6) expected rate of sand bar and terrace loss in year 2010, 2030, 2060 or until the end of the next license.

Characterize channel/basin geomorphology. Gordon Grant is conducting a similar study on the Deschutes River
Analyze ways operations can be modified to facilitate sediment passage (especially sand-sized particles).

Reservoir

Study 8.1.6 products related to Brownlee Res only. Emphasis needs to be placed on entire study reach.

G. Study Methodology/Modeling Application

Characterize sediment budget above and below Hells Canyon Complex before and after dam construction using observed and extrapolation of empirical data.
Display pre-dam extent and size of sandbars in the Snake River below Hells Canyon Dam to the Grande Ronde River.
Display a time line of extent and size of sandbars from time of dam construction to present.
Model and display future loss of sandbars based on expected flow regimes and sediment budget.
Model and display future terrace erosion based on expected flow regimes and sediment budget.
Characterize sediment particle size distribution at critical aquatic habitat sites.

Description of Modeling Applications

Qualitative studies are fine as long as the results are peer reviewed.

H. Proposed IPC Studies

Study 8.1.6: Sediment Transport (Within Reservoirs and Downstream-Beaches)

I. Integration with Other Forest Service Issues

Aquatic Habitat/Fisheries
Flow Study
Terrestrial riparian and wildlife habitat
Recreation
Cultural

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Change in operational drawdowns of reservoirs.
Change in operational release of water from reservoirs to minimize sandbar and terrace erosion.

Construction of developed river campsites.
Stabilization of critical sandbars, terraces, and stream banks.
Cultural resource mitigation.

M. Notes/Comments

Beach erosion base period for Section 7 determination is date of Snake River designation, 1975.
Need to evaluate reasonable/unreasonable diminishment.
Stabilization of sand bars and beaches.

N. Summary of Analysis Results

Summary report addressing FS questions with justified conclusions.
Bars are formed by recirculation flows caused by bedrock constrictions. Reattachment bars are more susceptible to erosion than separation bars (Grams and Schmidt). Top of bars is approximately 45,000 cfs, above that flow terrace erosion is possible. As bars erode and lower in elevation, lower flows may begin eroding terraces.
Idaho Power Company would like to explore the opportunity to do some mitigation/stabilization work in the near future.

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By: Terry Carlson, Dave Kennell, Dean Grover, Kevin Myers, John Anderson

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Document #9

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

Sturgeon Below Hells Canyon **Dam**

A. Issue Statement

The effects of Hells Canyon Complex Dam on sturgeon viability in the Snake River.

Questions to Answer

1. What are the sturgeon population numbers and relative distribution in the Snake River below Hells Canyon Dam?
2. Do dam operations (flow and temperature) affect sturgeon populations and distribution?
3. Assessment of habitat needs to maintain white sturgeon viability.
4. How can sturgeon habitat be improved?
5. Is the diversity and distribution of macroinvertebrates adequate to sustain or enhance sturgeon populations?

B. Geographic Scope of Concern

Project length from upstream of Brownlee Reservoir to the Grande Ronde River.

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7. 1982 CMP, page 4. Revised Recreation Section: "Continue to encourage IPC to maintain higher than licensed minimum flows and moderate release rates in recognition of both fisheries and recreation values." 1982 CMP, page 19. Water and Soils: "Maintain or enhance the present level of water quality and soil productivity." 1982 CMP, page 13. Fisheries: "Maintain and protect fish habitat through careful resource management and recreation development. Provide opportunities for visitors to enjoy NRA fisheries while maintaining high quality fish habitat." Wallowa-Whitman National Forest Plan Standards and Guidelines: page 4-30. (1) "To protect and manage habitat for the perpetuation and recovery of plants and animals which are listed as threatened, endangered, or sensitive..." page 4-22 (1) "Give management and enhancement of water quality, protection of watercourses and streamside management units and fish habitat priority over uses described or implied in all other management standards and guidelines." (12) "Alter watershed conditions only to the extent that aquatic and riparian goals will still be met and other valid water uses, such as irrigation, will not be adversely affected ..." (32) Protect instream flow on National Forest System lands through critical analysis of proposed water uses ..." page 4-32. (4) "Recognize existing hydropower withdrawals to the extent required by law." (5) "Encourage hydropower production unless precluded or further limited by specific management area direction ..." PACFISH/INFISH: Riparian Goals and Objectives (LRMP Amendment). Snake River Wild and Scenic River Plan: Desired Future Conditions page I-7 to 1-9.

D. Information Needed to Analyze the Question/Issue

Distribution, size, and number of sturgeon below Hells Canyon Dam.

E. Existing Data

Idaho and Oregon Departments of Fish and Game surveys (Agencies) IPC study (IPC)

F. Data Gaps/Study Needs

None at this time.

G. Study Methodology/Modeling Application

IPC study proposal

H. Proposed IPC Studies

Study 8.1.9: Status and Habitat Use of White Sturgeon in the Hells Canyon Complex

I. Integration with Other Forest Service Issues

Recreation fishing and river use
Macroinvertibrate studies

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

M. Comments/Notes

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Edited by Myrna L. Evans 8/27/98, 9/22/98, 10/15/98

Document #10

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ANALYSIS

Aquatic Habitat and Anadromous Salmonid Population Dynamics

A. Issue Statement

The effects of the Hells Canyon Complex on anadromous fish runs in the Snake River.

Objective
Sustain/enhance native (wild) runs of Chinook Salmon and Steelhead Trout on National Forest System Lands

Questions
1. What are the effects of flow fluctuations on anadromous fish habitat, juvenile fish, and redds in the main stem
   of the Snake River and tributaries below Hells Canyon Dam?
2. What are the habitat conditions of the main stem of the Snake River below Hells Canyon Dam?
3. Habitat condition of Salmon River, Grande Ronde River, Imnaha River, and Big Sheep Creek for the runs
   displaced by the dams.
4. Can fish access tributary habitat with reservoir drawdown fluctuations, fluctuating main stem river levels, and
   the slope of debris fans?
5. Interaction of reservoir species with anadromous fish if resident fish are spilled over the dams during large
   flows (i.e., crappie and small mouth bass)?
6. What have been the changes to the wildlife food chain and nutrient cycling in freshwater with the loss/decline
   of the anadromous fish runs?
7. How has the hatchery program affected wild fish runs?

B. Geographic Scope of Concern

Hells Canyon dam to Grande Ronde River

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7.

1982 CMP, page 4, Revised Recreation Section: "Continue to encourage IPC [Idaho Power

threatened, endangered, or sensitive...". page 4-22 (1) "Give management and enhancement of water quality, protection of watercourses and streamside management units and fish habitat priority over uses described or implied in all other management standards and guidelines". (12) "Alter watershed conditions only to the extent that aquatic and riparian goals will still be met and other valid water uses, such as irrigation, will not be adversely affected ...". (32) Protect instream flow on National Forest System lands through critical analysis of proposed water uses ..." page 4-32. (4) "Recognize existing hydropower withdrawals to the extent required by law. (5) "Encourage hydropower production unless precluded or further limited by specific management area direction ..."

PACFISH/INFISH: Riparian Goals and Objectives (LRMP Amendment).

Snake River Wild and Scenic River Plan: Desired Future Conditions pages I-7 to I-9.

1998 Upper Columbia and Snake River ESU Biological Opinion (1998): Mechanism 4 states that the Forest Service shall maximize use of 4(e) authority to protect critical habitat from activities associated with laws than may conflict with the Endangered Species Act (ESA).

USDA Forest Service. 1988. Payette National Forest Land and Resource Management Plan. Desired Future Condition for Fish Habitat: The present overall condition of fish habitat capability in drainages with salmon and steelhead will be improved by limiting sediment production and investing in fish habitat and watershed improvement and erosion control on roads. Resident fish habitat is expected to be maintained in present condition in drainages upstream from Hells Canyon Dam (page IV-41). Standards and Guidelines for Fish Habitat Management: Ensure that protection is provided for streams, streambanks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment (page IV-42). Recognize fish habitat requirements and values coequally with other National Forest System resources and uses when permitting hydropower development (page IV-42). Fish passage will be restored where Forest Service authorized or conducted construction has impaired it, except where the habitat made available would be insignificant or inconsequential, based on a determination of a journey fisheries scientist. Fish passage will be reviewed during all new or proposed construction activities in or near streams, Where fish passage occurs it will not be impaired. If fish passage is inadvertently impaired, during future actions it will be restored, Water storage reservoirs, presently in existence are exempted from these requirements (page IV-42). **Inter-Agency Cooperation and Coordination:** Maintain close liaison with the Idaho Department of Fish and Game, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and other participating agencies and Indian tribes in the restoration and enhancement of Idaho's anadromous fish resource (page IV-42). Desired **Future Condition for Soil and Water:** Water quality will meet State standards (page IV-70). **Standards and Guidelines for Soil and Water, Water Quality Management:** Meet or exceed Idaho Water Quality Standards for the protection of beneficial uses (page IV-71). Soil And Water Resource Investigations: Evaluate and respond to application for hydropower, water diversion, water storage, and other water-related facilities on a case by case basis. Provide timely comments to the Federal Energy Regulatory Commission (FERC) or to the appropriate State agency. The potential direct, indirect, and cumulative effects of proposed projects will be evaluated. Recommendations to FERC or other agencies shall be based on Forest-wide and Management Area goals as stated in this Plan, and the results of more specific analysis at the project level. Applicants may be required to use private consultants or their own personnel to make environmental evaluation needed by the Forest Service and/or State agencies, Close coordination with other agencies will be promoted during this process (page IV-78). Water Rights and Uses: Protect the water needed to successfully accomplish the programs mandated by Federal legislation and Executive Orders, including the Organic Administration Act, the Multiple-Use SustainedYield Act, the National Forest Management Act, Indian Treaty Rights, etc. (page IV-82). The United States has Federal reserved water rights for timber and watershed management, including instream flows necessary to secure favorable conditions of water flow, as mandated by the Organic Administration Act of 1897 (page IV-83). Instream flows may be asserted in order to carry out the specific purposed of the Wild and Scenic Rivers Act, the Wilderness Act, the Endangered Species Act, and other similar Federal legislation and Executive Orders (page IV-83). The Federal Power Act authorizes the Secretary of Agriculture to condition occupancy to protect the purposes for which the land was reserved (page IV-83). **Desired Future Condition for Riparian Areas:** Riparian areas of the future on the Payette National Forest will exhibit an improving trend where recovery of degraded conditions is possible and will be protected where they are now in good condition. Management decisions **will** be made in favor of riparian dependent resources where conflicts exist with man's use (page IV-91). Standards and **Guidelines for Riparian Areas:** Actions within or affecting riparian areas will include protection and, where applicable, improvement of dependant resources. Other resource uses and activities will occur to the extent they

support or do not adversely affect the maintenance of resources. Preferential consideration is given to ripariandependant resources over other resources and activities when conflicts occur (page IV-95).

D. Information Needed to Analyze the Issue/Question

Habitat condition surveys on the tributaries (Salmon River, Grande Ronde River, Imnaha River, Big Sheep Creek, perennial tributaries to Snake River below Hells Canyon Dam. The aquatics working group recommended that the Anadromous Study Plans (8.1.7) be modified include passage issues. The aquatics working group recommended that Study Plan 8.1.7 be modified to address habitat suitability in the tributaries. Carp and salmonid interactions within a regulated system. Study 8.1.4 does not appear to be a complete IFIM study. Recommend the aquatic working group review IFIM habitat suitability curves developed for the project. Trend of salmonid (wild and hatchery) runs on National Forest System lands affected by the Lower Snake River Compensation Plan. Economic analysis of the impact of the Lower Snake River Compensation Plan on wild fish runs Historic conditions are covered in Study IPC 8.1.7 Adequacy of upstream habitat for re-introduction of anadromous salmonids above the dams. Feasibility of passing or capturing out migrating juvenile salmonids through the project.

E. Existing Data

Forest Service Stream Surveys for the Imnaha River and Grande Ronde River Tribes (USFS Offices, Enterprise
OR and SO)
Idaho Department of Fish and Game (IFG) and Oregon Department of Fish and Wildlife (ODFW) stream surveys
(Idaho and Oregon state agencies)
National Marine Fisheries Services (NMFS), IFG, ODFW population and trend information (agencies)

F. Data Gaps/Study Needs

Tributary Habitat Surveys
Economic Analysis

G. Study Methodology/Modeling Application

Tributary Stream Surveys - Use USFS Region 6 Stream Survey Protocol and PFC Methodology
Capture and radio tag Chinook adults and juveniles at ODFW, IFG, and Tribal Salmon Traps
IFIM habitat suitability curves should be reviewed by the Aquatics Working Group (at minimum)

H. Proposed IPC Studies

Study 8.1.12: Benthic Macro-invertebrates
Study 8.1.4: Oxbow Bypass Study
Study 8.1.7: Anadromous Potential within the Main Stem Snake River
Study 8.1.8: Future direction of IPC Anadromous Hatchery Program

I. Integration with Other Forest Service Issues

Crappie and small mouth bass issue
Flow issue
Terrestrial food chain issues
Mollusk/Macro-invertebrate studies
Economic analysis
Bull trout

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PMEmeasures that may lead to terms and conditions of a new license)*

Anadromous fish

M. Notes/Comments

Minimum instream flows as required by the National Marine Fisheries Service, other agencies, settlements may affect proposed PME measures Technical feasibility of retrofitting dams for fish passage Lower Snake River compensation plan built a large number of hatcheries in the basin to increase smolt production. Hatchery fish compete with wild fish for food and space. Hatchery production may be masking the number of wild fish in the region. he lower eight Snake River dams are a concern. Approximately 90 percent of the smolt production is lost through the dams. Loss of steelhead trout and chinook salmon runs have resulted in less food for bull trout and terrestrial wildlife, as well as resulting in reduced nutrient cycling from the oceans to fresh water systems. With construction of dams and no anadromous run upstream, fish runs are more dependent on the Imnaha, Big Sheep, Salmon systems. Forest Service activities and management are being constrained due to depressed populations of steelhead trout and chinook salmon.

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Document #11

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

Pollutant Sources to Hells Canyon Complex

A. Issue Statement

The effects of pollutant loading from upstream tributaries and within the Hells Canyon Complex (HCC) may result in water quality that does not fully support the beneficial uses in Brownlee Reservoir, Oxbow Reservoir, Hells Canyon Reservoir, and the Snake River below Hells Canyon (HC) Dam.

Objectives
Provide water quality that supports all beneficial uses in the HCC reservoirs and the Snake River below HC Dam.

Questions to Answer
1. What are the water quality pollutants to the Hells Canyon Complex?
2. What are the pollutant sources and pollutant loads?
3. What is the feasibility and options of reducing pollutant loads?
4. What pollutant reductions are needed to fully support beneficial uses?

B. Geographic Scope of Concern

Major tributaries to the Snake River upstream from Brownlee Reservoir to the Grande Ronde River; along with Brownlee, Oxbow and Hells Canyon Reservoirs.

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7.

Clean Water Act and State of Oregon and Idaho water quality regulations

303(d) stream segments in Oregon and Idaho

PACFISH/INFISH: Goals and Objectives

National Marine Fisheries Service (NMFS) identified HCC as a specific cause of lethal water temperatures (Sierra Club legal defense fund, 3/20/97).

Wallowa-Whitman National Forest Plan Standards and Guidelines: page 4-22. (1) "Give management and enhancement of water quality, protection of watercourses and streamside management units and fish habitat priority over uses described or implied in all other management standards and guidelines". (2,4,5) "Meet Water Quality Standards for waters of the States of Oregon and Idaho ..." (7) "Prevent measurable temperature increases in Class I Streams ..." (12) "Alter watershed conditions only to the extent that aquatic and riparian goals will still be met and other valid water uses, such as irrigation, will not be adversely affected ..."

Snake River Wild and Scenic River Plan: Desired Future Conditions pages I-7 to I-9

Payette National Forest Land and Resource Management Plan. **Desired Future Condition for Fish Habitat:** The present overall condition of fish habitat capability in drainages with salmon and steelhead will be improved by limiting sediment production and investing in fish habitat and watershed improvement and erosion control on roads. Resident fish habitat is expected to be maintained in present condition in drainages upstream from Hells Canyon Dam (page IV-41). **Standards and Guidelines for Fish Habitat Management:** Ensure that protection is provided for streams, streambanks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment (page IV-42). Recognize fish habitat requirements and values coequally with other National Forest System resources and uses when permitting hydropower development (page IV-42). **Inter-Agency Cooperation and Coordination:** Maintain close liaison with the Idaho Department of Fish and Game, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and other participating agencies and Indian tribes in the restoration and enhancement of Idaho's anadromous fish resource (page IV-42). **Desired Future Condition for Soil and Water:** Water quality will meet State standards (page IV-70). **Standards and Guidelines for Soil and Water, Water Quality Management:** Meet or exceed Idaho Water Quality Standards for the protection of beneficial uses (page IV-71). **Soil And Water Resource Investigations:** Evaluate and respond to application for hydropower, water diversion, water storage, and other water-related facilities on a case by case basis. Provide timely comments to the Federal Energy Regulatory Commission (FERC) or to the appropriate State agency. The potential direct, indirect, and cumulative effects of proposed projects will be evaluated. Recommendations to FERC or other agencies shall be based on Forest-wide and Management Area goals as stated in this Plan, and the results of more specific analysis at the project level. Applicants may be required to use private consultants or their own personnel to make environmental evaluation needed by the Forest Service and/or State agencies, Close coordination with other agencies will be promoted during this process (page IV-78). **Water Rights and Uses:** Protect the water needed to successfully accomplish the programs mandated by Federal legislation and Executive Orders, including the Organic Administration Act, the Multiple-Use Sustained-Yield Act, the National Forest Management Act, Indian Treaty Rights, etc. (page IV-82). The United States has Federal reserved water rights for timber and watershed management, including instream flows necessary to secure favorable conditions of water flow, as mandated by the Organic Administration Act of 1897 (page IV-83). Instream flows may be asserted in order to carry out the specific purposed of the Wild and Scenic Rivers Act, the Wilderness Act, the Endangered Species Act, and other similar Federal legislation and Executive Orders (page IV-83). The Federal Power Act authorizes the Secretary of Agriculture to condition occupancy to protect the purposes for which the land was reserved (page IV-83). **Desired Future Condition for Riparian Areas:** Riparian areas of the future on the Payette National Forest will exhibit an improving trend where recovery of degraded conditions is possible and will be protected where they are now in good condition. Management decisions will be made in favor of riparian dependent resources where conflicts exist with man's use (page IV-91). **Standards and Guidelines for Riparian Areas:** Actions within or affecting riparian areas will include protection and, where applicable, improvement of dependant resources. Other resource uses and activities will occur to the extent they support or do not adversely affect the maintenance of resources. Preferential consideration is given to riparian-dependant resources over other resources and activities when conflicts occur (page IV-95).

D. Information Needed to Analyze the Question/Issue

Characterization of current pollutant sources and loads to Hells Canyon Complex.

E. Existing Data

EPA STORET (EPA)
Idaho and Oregon water quality databases (State of Oregon and Idaho DEQ)
Idaho DEQ BURP data (State of Idaho DEQ)
"Tributary Nutrient Loading to the Snake River Swan Falls to Farewell Bend, March Through October 1995" (Myers, Parkinson, Harrison 1998). (IPC)
Existing literature of pollution from recreational use and water craft.

F. Data Gaps/Study Needs

Characterization of water quality from major tributaries going into the HCC reservoirs and Snake River below HC Dam. Compilation and summary of existing water quality data.
Characterization of the sediments near the head of Brownlee Reservoir.
Characterization of the nutrient recycling and processing within the reservoirs.
Characterization of the recreational impacts on water quality.

G. Study Methodology/Modeling Application

Compilations and summary of existing data.
Literature search and conclusion of possible pollutant sources such as recreational impacts on water quality.
IPC study plan and interim report; 8.1.1 - Pollutant Sources to Hells Canyon Complex.
"Brownlee Reservoir Water Quality Response Model to Nutrient and Algae Inflow Concentration" (Harrison and Anderson, 1997).
Model long-term recycling of nutrients in Brownlee Reservoir.

H. Proposed IPC Studies

8.1.1. Pollutant Sources to Hells Canyon Complex.
8.1.2. Pollutant Transport and Processing Study.
8.1.3. Turbine Oil Losses from Hells Canyon Complex
8.1.4. Oxbow Bypass Study
8.1.5. Total Dissolved Gas Study
8.1.6. Sediment Transport Study

I. Integration with Other Forest Service Issues

Aquatic issues.
Drawdown and flow issues.
Sediment issues.

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Improvements in upstream water quality.
Change in operational drawdowns of reservoirs.
Change in operational release of water from reservoirs.
    Discharge
    Thermal regime

M. Notes/Comments

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Document 11, continued

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

Water Quality

A. Issue Statement (Pollutant Transport and Processing Study)

The effects of the Hells Canyon Complex along with dam operations and reservoir drawdown may result in water quality that does not fully support the beneficial uses in Brownlee, Oxbow, Hells Canyon Reservoirs and the Snake River below Hells Canyon (HC) Dam.

Objectives
Provide water quality that supports all beneficial uses in the HCC reservoirs and the Snake River below HC Dam.

Questions to Answer
1. What are the water quality pollutants to the Hells Canyon Complex reservoirs?
2. What are the pollutant sources and pollutant loads?
3. What are the effects of dam operations (seasonal drawdowns and reservoir fluctuations) on water quality within Brownlee, Oxbow, Hells Canyon reservoirs?
4. What is the nutrient recycling and processing within the reservoirs?
5. What are the effects of dam operations on water quality in the Snake River below HC Dam?
6. What are the recreational impacts (petroleum from watercraft and human waste) to water quality and aquatic resources?
7. What are the effects of dam operations and/or reservoir drawdown on temperature?
8. What are the effects of various temperature regimes on aquatic resources?
9. What is the feasibility and options of reducing pollutant loads?
10. What pollutant reductions needed to fully support beneficial uses?
11. What possible changes in dam operations can be considered to improve water temperature below HC dam?

B. Geographic Scope of Concern

Brownlee, Oxbow, Hells Canyon Reservoirs and the Snake River below HC Dam to the Grande Ronde River.

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7

Clean Water Act and State of Oregon and Idaho water quality regulations

303(d) stream segments in Oregon and Idaho

PACFISH/INFISH: Goals and Objectives

NMFS identified HCC as a specific cause of lethal water temperatures. (Sierra Club legal defense fund, 3/20/97).

Wallowa-Whitman National Forest Plan Standards and Guidelines: page 4-22. (1) "Give management and enhancement of water quality, protection of watercourses and streamside management units and fish habitat priority over uses described or implied in all other management standards and guidelines." (2,4,5) "Meet water quality standards for waters of the States of Oregon and Idaho ..." (7) "Prevent measurable temperature increases in Class I Streams ..." (12) "Alter watershed conditions only to the extent that aquatic and riparian goals will still be met and other valid water uses, such as irrigation, will not be adversely affected ..." Snake River Wild and Scenic River Plan: Desired Future Conditions page. I-7 to I-9.

USDA Forest Service. 1988. Payette National Forest Land and Resource Management Plan. **Desired Future Condition for Fish Habitat:** The present overall condition of fish habitat capability in drainages with salmon and steelhead will be improved by limiting sediment production and investing in fish habitat and watershed improvement and erosion control on roads. Resident fish habitat is expected to be maintained in present condition in drainages upstream from Hells Canyon Dam (page IV-41). **Standards and Guidelines for Fish Habitat Management:** Ensure that protection is provided for streams, streambanks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment (page IV-42). Recognize fish habitat requirements and values coequally with other National Forest System resources and uses when permitting hydropower development (page IV-42). **Inter-Agency Cooperation and Coordination:** Maintain close liaison with the Idaho Department of Fish and Game, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and other participating agencies and Indian tribes in the restoration and enhancement of Idaho's anadromous fish resource (page IV-42). **Desired Future Condition for Soil and Water:** Water quality will meet State standards (page IV-70). **Standards and Guidelines for Soil and Water, Water Quality Management:** Meet or exceed Idaho Water Quality Standards for the protection of beneficial uses (page IV-71). **Soil And Water Resource Investigations:** Evaluate and respond to application for hydropower, water diversion, water storage, and other water-related facilities on a case by case basis. Provide timely comments to the Federal Energy Regulatory Commission (FERC) or to the appropriate State agency. The potential direct, indirect, and cumulative effects of proposed projects will be evaluated. Recommendations to FERC or other agencies shall be based on Forest-wide and Management Area goals as stated in this Plan, and the results of more specific analysis at the project level. Applicants may be required to use private consultants or their own personnel to make environmental evaluation needed by the Forest Service and/or State agencies, Close coordination with other agencies will be promoted during this process (page IV-78). **Water Rights and Uses:** Protect the water needed to successfully accomplish the programs mandated by Federal legislation and Executive Orders, including the Organic Administration Act, the Multiple-Use Sustained-Yield Act, the National Forest Management Act, Indian Treaty Rights, etc. (page IV-82). The United States has Federal reserved water rights for timber and watershed management, including instream flows necessary to secure favorable conditions of water flow, as mandated by the Organic Administration Act of 1897 (page IV-83). Instream flows may be asserted in order to carry out the specific purposed of the Wild and Scenic Rivers Act, the Wilderness Act, the Endangered Species Act, and other similar Federal legislation and Executive Orders (page IV-83). The Federal Power Act authorizes the Secretary of Agriculture to condition occupancy to protect the purposes for which the land was reserved (page IV-83). **Desired Future Condition for Riparian Areas:** Riparian areas of the future on the Payette National Forest will exhibit an improving trend where recovery of degraded conditions is possible and will be protected where they are now in good condition. Management decisions will be made in favor of riparian dependent resources where conflicts exist with man's use (page IV-91). **Standards and Guidelines for Riparian Areas:** Actions within or affecting riparian areas will include protection and, where applicable, improvement of dependant resources. Other resource uses and activities will occur to the extent they support or do not adversely affect the

maintenance of resources. Preferential consideration is given to riparian-dependant resources over other resources and activities when conflicts occur (page IV-95).

D. Information Needed to Analyze the Question/Issue

Characterization of water quality in the entire HCC study area.
Transport and processing of water quality parameters through the entire study area.
Idaho Power proposed studies

E. Existing Data

EPA STORET (EPA)
Idaho and Oregon water quality databases (State of Oregon/Idaho DEQ offices)
Idaho DEQ BURP data (State of Idaho DEQ offices)
"Tributary Nutrient Loading to the Snake River Swan Falls to Farewell Bend, March Through October 1995" (Myers, Parkinson, Harrison 1998) (IPC)
"Brownlee Reservoir Water Quality Response Model to Nutrient and Algae Inflow Concentration" (Harrison and Anderson, 1997) (IPC)

F. Data Gaps/Study Needs

Determination of effects of temperature regimes on proposed and/or listed threatened and endangered aquatic species in the Snake River below HC Dam.
Model temperature regimes under a variety of flows (different operating scenarios) from Brownlee through the dams and downstream on the Snake River to the Grande Ronde River.
Characterization of the nutrient recycling and processing within the reservoirs.

G. Study Methodology/Modeling Application

Model temperature regimes under a variety of flows (different operating scenarios) from Brownlee through the dams and downstream on the Snake River to the Grande Ronde River.
Model nutrient recycling and processing within the reservoirs.

H. Proposed IPC Studies

8.1.1. Pollutant Sources to Hells Canyon Complex.
8.1.2. Pollutant Transport and Processing Study.
8.1.3. Turbine Oil Losses from Hells Canyon Complex
8.1.4. Oxbow Bypass Study
8.1.5. Total Dissolved Gas Study
8.1.6. Sediment Transport Study

I. Integration with Other Forest Service Issues

All aquatic issues.
All drawdown and flow issues.
All sediment issues.

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Improvements in upstream water quality.
Change in operational drawdowns of reservoirs.
Change in operational release of water discharge and thermal regimes from reservoirs.

M. Notes/Comments

It is important that modeling look at the transport and processing of water quality parameters through the entire study area not just Brownlee Reservoir. This includes the need to model temperature within and below the reservoirs at various operational scenarios.

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Document 11, continued

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

Elevated Dissolved Gas Effects to Some Aquatic Species

A. Issue Statement

The effects of plant operations can result in elevated total dissolved gas (TDG) which may adversely affect some aquatic species.

Objectives
Provide water quality that supports all beneficial uses in the HCC reservoirs and the Snake River below Hells Canyon Dam.

Questions to Answer
1. What is the relationship between TDG and project operations?
2. What are the measures to predict TDG under a full range of operational scenarios?
3. What is the rate of downstream dissipation of TDG below HC Dam?
4. What are the options of reducing TDG below Hells Canyon Dam?
5. What are the effects of TDG concentrations on TE&S species in the project area?

B. Geographic Scope of Concern

Brownlee, Oxbow and Hells Canyon Dams; and the Snake River below HC Dam.

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7

Clean Water Act and State of Oregon and Idaho water quality regulations

303(d) stream segments in Oregon and Idaho

PACFISH/INFISH: Goals and Objectives

Wallowa-Whitman National Forest Plan Standards and Guidelines: page 4-22. (1) "Give management and enhancement of water quality, protection of watercourses and streamside management units and fish habitat priority over uses described or implied in all other management standards and guidelines." (2,4,5) "Meet water quality standards for waters of the States of Oregon and Idaho ..." (7) "Prevent measurable temperature increases in Class I Streams ..." (12) "Alter watershed conditions only to the extent that aquatic and riparian goals will still be met and other valid water uses, such as irrigation, will not be adversely affected ..."

Snake River Wild and Scenic River Plan: Desired Future Conditions pages I-7 to I-9

Payette National Forest Land and Resource Management Plan. **Desired Future Condition for Fish Habitat:** The present overall condition of fish habitat capability in drainages with salmon

and steelhead will be improved by limiting sediment production and investing in fish habitat and watershed improvement and erosion control on roads. Resident fish habitat is expected to be maintained in present condition in drainages upstream from Hells Canyon Dam (page IV-41). **Standards and Guidelines for Fish Habitat Management:** Ensure that protection is provided for streams, streambanks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment (page IV-42). Recognize fish habitat requirements and values coequally with other National Forest System resources and uses when permitting hydropower development (page IV-42). **Inter-Agency Cooperation and Coordination:** Maintain close liaison with the Idaho Department of Fish and Game, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and other participating agencies and Indian tribes in the restoration and enhancement of Idaho's anadromous fish resource (page IV-42). **Desired Future Condition for Soil and Water:** Water quality will meet State standards (page IV-70). **Standards and Guidelines for Soil and Water, Water Quality Management:** Meet or exceed Idaho Water Quality Standards for the protection of beneficial uses (page IV-71). **Soil And Water Resource Investigations:** Evaluate and respond to application for hydropower, water diversion, water storage, and other water-related facilities on a case by case basis. Provide timely comments to the Federal Energy Regulatory Commission (FERC) or to the appropriate State agency. The potential direct, indirect, and cumulative effects of proposed projects will be evaluated. Recommendations to FERC or other agencies shall be based on Forest-wide and Management Area goals as stated in this Plan, and the results of more specific analysis at the project level. Applicants may be required to use private consultants or their own personnel to make environmental evaluation needed by the Forest Service and/or State agencies, Close coordination with other agencies will be promoted during this process (page IV-78). **Water Rights and Uses:** Protect the water needed to successfully accomplish the programs mandated by Federal legislation and Executive Orders, including the Organic Administration Act, the Multiple-Use Sustained-Yield Act, the National Forest Management Act, Indian Treaty Rights, etc. (page IV-82). The United States has Federal reserved water rights for timber and watershed management, including instream flows necessary to secure favorable conditions of water flow, as mandated by the Organic Administration Act of 1897 (page IV-83). Instream flows may be asserted in order to carry out the specific purposed of the Wild and Scenic Rivers Act, the Wilderness Act, the Endangered Species Act, and other similar Federal legislation and Executive Orders (page IV-83). The Federal Power Act authorizes the Secretary of Agriculture to condition occupancy to protect the purposes for which the land was reserved (page IV-83). **Desired Future Condition for Riparian Areas:** Riparian areas of the future on the Payette National Forest will exhibit an improving trend where recovery of degraded conditions is possible and will be protected where they are now in good condition. Management decisions will be made in favor of riparian dependent resources where conflicts exist with man's use (page IV-91). **Standards and Guidelines for Riparian Areas:** Actions within or affecting riparian areas will include protection and, where applicable, improvement of dependant resources. Other resource uses and activities will occur to the extent they support or do not adversely affect the maintenance of resources. Preferential consideration is given to riparian-dependant resources over other resources and activities when conflicts occur (page IV-95).

D. Information Needed to Analyze the Question/Issue

Results from proposed IPC studies.

E. Existing Data

Nitrogen study and data (data location?)
TDG study by IPC
"Hells Canyon Complex Total Dissolved Gas Study" (Myers, Stute 1998).

F. Data Gaps/Study Needs

None to date.

G. Study Methodology/Modeling Application

Model dissipation rates below Hells Canyon Dam.
Spill/Discharge predictions and reoccurrence intervals based on various scenarios of reservoir level/storage operational levels .

H. Proposed IPC Studies

8.1.5. Total Dissolved Gas Study

I. Integration with Other Forest Service Issues

Aquatic species of concern; i.e., spring and fall chinook, steelhead, bull trout, and white sturgeon.

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Change in operational release of water from reservoirs to minimize supersaturation.

M. Notes/Comments

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Document #12

Hells Canyon Complex Relicensing
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INFORMATION NEEDS ASSESSMENT

FERC Economic Issues

A. Issue Statement (Economic Issue Statement #1, Recreation)

A significant amount of recreation use occurs in the reservoirs above the three dams and in the Snake River below Hells Canyon Dam. The Hells Canyon National Recreation Area provides a range of recreation opportunities in the deepest river canyon in North America. The river provides a blend of both motorized and nonmotorized whitewater boating in a steep canyon setting that is unique in the nation. The Hells Canyon Wilderness upland from the river provides remote, primitive experiences in a rugged, environment. Recreation and scenery have been designated outstandingly remarkable values (ORV) for the Wild and Scenic Snake River and the Wild and Scenic Imnaha River. In addition to using the area for recreation, people value knowing that the area exists in its current state without ever planning to actually visit or use the area, or that it exists for future generations. Many communities benefit economically from recreation-related businesses on the Snake River and the reservoirs.

Hells Canyon Complex operations, primarily fluctuating water flows (daily and seasonal) are affecting the type, quantity and quality of recreation use in the three reservoirs and on the Snake River. Operations are affecting recreation carrying capacity, recreation use (private and commercial) and future recreation opportunities. Changes in operations may impact the economic conditions for recreation users, recreation-related businesses, communities and counties in the region.

The type and extent of recreation use and the economic effects including both the economic impacts and economic values (use and nonuse) associated with recreation are important to maintaining a wide range of available recreation activities and the diversity of users of the HCNRA.

B. Geographic Scope of Concern (from fine scale to broad scale)

Refer to attached maps
Snake River, Hells Canyon Wilderness
Communities adjacent to the HCNRA
Communities adjacent to the Hells Canyon Complex reservoirs
Wallowa, Baker, Union, Malheur counties in Oregon
Asotin, Columbia, Garfield, Walla Walla counties in Washington
Adams, Washington, Valley, Boise, Gem, Payette, Canyon, and Ada counties in Idaho
Pendleton, Boise, and Spokane Bureau of Economic Analysis Areas (BEAs)
Columbia River Basin Assessment Boundary (Washington, Oregon, and Idaho)
Nationally significant recreation area

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7.

Wallowa-Whitman National Forest Plan

Page 2-29, Supply/Demand for Recreation
Issues page 3-3, Local Economy Effects
Issues page 3-3, Recreation Diversity
Goal page 4-2, Recreation Opportunities
Outputs page 4-4 and 4-6, Fish/Wildlife Recreation
page 2-29, Supply/Demand of Recreation
Issues page 3-3, Local Economy effects
Issues page 3-3, Recreation Diversity
Goal page 4-2, Recreation Opportunities
Outputs, page 4-4 and 4-6, Fish/Wildlife Recreation
Outputs, page 4-8 Local Economy
Desired Future Conditions (DFCs) page 4-13-17 Recreation
S&Gs, page 4-31 Special Uses O/Gs
page 4-44 to 46 Wildlife
Monitoring, page 5-13 Communities
Monitoring, page 5-13 Costs and Values
Monitoring, pages 5-11/12 Recreation
Monitoring, page 5-58 Wilderness Values
Monitoring, page 5-60 Wild and Scenic Rivers
Monitoring, page 5-61 Recreation Setting
Monitoring, page 5-63 Visual Resource Objectives
Monitoring, page 5-67 Costs and Values
Monitoring, page 5-68 Community Effects

Snake River Recreation Management Plan

Objectives, page 1 Recreation
DFCs, page 2 Unique Blend of Boating
DFCs, page 2 Year-round diverse sport fishery
DFCs, page 2 Diversity of interpretive/wildlife viewing
DFCs, page 2 Protect/Enhance outstandingly remarkable values (ORVs)
S&Gs, page 4 to 15 Recreation and Scenery
ROS Characteristics, pages C-1 to C-6
Recreation Monitoring Appendix D-1 to D-8
FEIS Issues, page 1-13 Recreation Economics
FEIS Key Indicators, page 1-13: O/G revenue
FEIS Key Indicators, page 1-13: Recreation Expenditures
FEIS Key Indicators, page 1-13: Number and Type Recreation Use
FEIS Issues, page 1-14: Managing for Intended Recreation Experience
FEIS Key Indicators, page 1-14: (access, remoteness, encounters, visitor management, facilities, site management, fairness/equity)
FEIS Issues, page 1-14: Minimize Onshore Degradation
FEIS pages III-2 to 8 Recreation Opportunity Spectrum (ROS)
FEIS page III-9 to 11 Recreation ORVs
FEIS ORVs, page III-12 Wildlife
FEIS ORVs, page III-14 Fisheries
FEIS Social and Economic Environment page III-21

HCNRA Comprehensive Management Plan 1982 **(CMP)**

Snake River Recreation Management objectives/direction page 1, 8-11, 26-28
Hells Canyon Wilderness, page 44-47

Fisheries and recreation, page 13.
Wildlife and recreation, page 14 to 15
Cultural Resources, page 16-18

Payette National Forest Plan

Pages IV-9 to 24, Recreation
IV-113 to 117, Facilities
IV 118 to 123, Access, ROS
IV-129, Recreation Outputs
IV-137 to 138, Management Area 1, Recreation
V-6 to 7, Monitoring, Recreation

D. Information Needed to Analyze the Issue

Physical and social carrying capacity for the river
Physical and social carrying capacity for the uplands
Physical and social carrying capacity for the reservoir
Type and location of facilities
Historic use, trends, and project-induced use (private and commercial outfitters) Existing use and trends (amount, type of activities, location, timing)
Future use trends and projections
Visitor profiles (demographics, expenditures, activities, timing, location, outfitters, trips, etc.)
Factors (natural and human-caused) affecting use and quality of recreation experience (seasonal patterns, access, daily and seasonal flows, minimum and maximum flows for recreation, extent of past and current beach/campsites, activities, information, facilities, crowding on-site and off-site, amenities)
Effects of Hells Canyon Complex (HCC) operations and HCC portion of total effects on recreation capacity, use, and quality of experience
Changes in carrying capacity, use, and quality due to operations (beach erosion/fluctuating flows)
Total economic value of recreation:
- Use - consumptive (fishing: sport) and (hunting: big game and small game)
  - nonconsumptive (rafting, powerboating, camping, fish and wildlife viewing, hiking, etc.)
- Nonuse economic value of recreation area

Economic impact of recreation use (final demand, employment, income)

E. Existing Data

ROS polygon layer in GIS for Snake River and uplands (USFS Office, Baker City)
Recreation points layer in GIS (administrative, developed, and dispersed sites) (USFS Office, Baker City)
Management Area GIS layer (USFS Office, Baker City)
Ownership Layer (USFS Office, Baker City)
Access Layer (trails and roads) (USFS Office, Baker City)
Snake River Management Plan (SRMP) use limits (USFS Office, Clarkston Office)
River site inventory 1974 and resample 1994 (USFS Office, Clarkston Office)
River Database (private/commercial and powerboat/floaters) from 1970s to current with varying degrees of compliance based on type of information (USFS Office, Clarkston Office)
INFRA Database for upland sites from 1980s to current (USFS Office, Baker City)
SRMP Final Environmental Impact Statement use and trend analysis (USFS Office, Baker City)
Snake River Outfitter and Guide Environmental Assessment use analysis (USFS Office, Baker City)

HCNRA Comprehensive Management Plan (CMP) Draft Environmental Impact Statement carrying capacity, recreation use and trend analysis (USFS Office, Baker City)
ROS setting descriptions from Snake River Management Plan (USFS Office, Clarkston/Baker City)
ROS setting descriptions from HCNRA Draft CMP (USFS Office, Baker City)
Facilities sites plans for some river sites (USFS Office, Clarkston Office)
Historic Multiple Use and Study Plans for Hells Canyon (1960s-70s) (USFS Office, Baker City)
Selected Bibliography of economic value studies for recreation (USFS Office, Baker City)
Recent and ongoing economic value, expenditure, and impact studies and modeling for Lower Snake River Juvenile Migration Feasibility Study (DREW) from Corp of Engineers (CORP, Walla Walla Office)
Recent and ongoing economic value, expenditure, and impact studies and modeling from Snake River Resources Review (SR3) from Bureau of Reclamation (BUR, Boise Office)

F. Data Gaps/Study Needs

Determination of usable area in river corridor (MA 8) and physical carrying capacities
Physical location of sites in relation to river mile, INFRA database, and monitoring sites.
Historic use and induced use analysis
Current use analysis and visitor profiles (private and commercially outfitted)
Future use trends and projections
Visitor profiles (demographics, expenditure profiles, activities, timing, location, outfitters, trips, etc.)
Factors (natural and human-caused) affecting use and quality of recreation experience (seasonal patterns, access, daily and seasonal flows, minimum and maximum flows for recreation, extent of past and current beach/campsites, activities, information, facilities, crowding on-site and off-site, amenities)
Effects of HCC operations on recreation capacity, use, and quality of experience
Update carrying capacity analysis and trend analysis for HCNRA uplands
Economic value of recreation use by activity type:
- consumptive (fishing: sport) and (hunting: big game and small game)
- nonconsumptive (rafting, powerboating, camping, wildlife viewing, hiking, etc.)

Nonuse economic value of recreation area
Economic impact of recreation use (final demand, employment, income)

G. Study Methodology/Modeling Application

Use the Recreation Opportunity Spectrum (ROS) User's Guide to characterize carrying capacities for Snake River Wild and Scenic River Corridor (Management Area 8 boundary). This has already been done for the rest of the HCNRA. Use ROS descriptions from Snake River Management Plan and HCNRA Comprehensive Management Plan (in draft and working form) to assist characterization of access, remoteness, naturalness/visual quality, social encounters, visitor management, visitor impacts, and facilities. Use estimates of recreation use and visitor profiles to characterize current use patterns, effects on quality of recreation experience, and project future trends for recreation use in the HCC.

Coordinate with aquatics group on studies for characterizing changes in capacity, use, and quality due to HCC operations such as sediment transfer and flow fluctuations. Refer to Forest Service Aquatics Issues (Sediment Routing and Regimes) and (Flow Fluctuations Related to Dam Operations) for description of study methodology.

Characterize economic use values and expenditures, based on the use data, and ongoing and new surveys for each type of recreational activity. Determine nonuse economic values from literature search of applicable recent and ongoing studies particularly related to Upper and Lower

Snake River. Conduct reconnaissance level analysis of significance of nonuse issue. Use and nonuse values would comprise total economic value of Snake River recreation.

Recreation expenditures would be used as input data to a regional input-output model (IMPLAN) to derive the effect these expenditures would have on industrial output, employment, and personal income. Economic impacts would be estimated at the community, county and multi-county level described by the geographic scope of concern.

H. Proposed IPC Studies

8.6.1 - A Review of Past Recreation Issues and Use in the Hells Canyon Recreation Complex
8.6.2 - A Description of Current and Potential Recreational Use and Users Associated with Reservoirs within the Hells Canyon Complex
8.6.3 - A Description of Current and Potential Recreational Use and Users Associated with the Snake River within the HCNRA
8.6.4 - An Investigation into the Current and Potential Physical and Social Conflicts Associated with Recreational Use and Recreational Carrying Capacity of the Hells Canyon Complex
8.6.5 - A Description of the Impacts of Reservoir Water Fluctuations within the Hells Canyon Recreation Complex on Navigation, Recreational Opportunities, Amount of Recreational Use and Quality of Recreational Experience
8.6.6 - A Description of the Impacts of Project-Induced River Water level Fluctuations within the HCNRA on navigation, recreational opportunities, amount of recreational use, and quality of recreational experience.
8.6.7 - An Inventory of Existing Dispersed Recreational Access Sites Associated with the reservoirs within the Hells Canyon Complex, Recreational Use as those Sites, and Attitudes about Dispersed Access
8.6.8 - An Inventory of Existing, River-related Dispersed Recreational Access Sites within the HCNRA, Recreational Use at those Sites, and Attitudes about Dispersed Access
8.6.9 - An Evaluation of Current (1997-2000) and Potential Recreational Use at Major Developed Sites on Reservoirs within the Hells Canyon Complex
8.6.10 - An Evaluation of User's Attitudes about and Expectations of Major Developed Sites and Facilities on Reservoirs within the Hells Canyon Complex
8.6.11 - Description of Current Angling Use, Users and Angling Results at reservoirs within the Hells Canyon Complex
8.6.12 - A Description of Angling Use Associated with the Snake River within the HCNRA
8.6.13 - A Description of Hunting Pressure within the Hells Canyon Complex

I. Integration With Other Forest Service Issues

1. Recreation
2. Aquatics (Sediment Routing, Flow Fluctuations, Anadromous Salmonid, Bull Trout, Game Fish, Sturgeon)
3. Heritage (Prehistoric Sites)

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

To be determined

M. Comments/Notes

Proposed by Elaine Kohrman
Edited by Myrna L. Evans 9/1/98, 9/22/98, 10/15/98

Document 12, continued

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

FERC Economic Issues

A. Issue Statement (Economic Issue #2, Fish Habitat and Populations)

The Snake River and tributaries provide habitat for a variety of migratory and resident fish species. A number of these species have been, or are currently, economically relevant to a wide variety of users including anglers, guides and outfitters, commercial fishing interests, and American Indian tribes. Some of these species are listed as either endangered, threatened, or are proposed for listing under the Endangered Species Act. Fisheries is an outstandingly remarkable value (ORV) for the Wild and Scenic Snake and Imnaha Rivers. In addition to economic use value associated with fisheries, people may value the knowledge that certain fish species (endangered salmon for example) exist in the Snake River, completely aside from any current or future use.

Construction of the complex has contributed to the decline in migratory and resident fish populations on the Snake River. Adult migration upstream and juvenile migration downstream of the HCC has been significantly affected by project dams. In addition, Hells Canyon Complex operations relative to altered flow regimes, sediment catchment, fish passage, and fish hatchery programs are affecting fish habitat and populations.

Project operations should be consistent with the protection and enhancement of threatened and endangered fisheries and habitats in the river corridor. The habitat and population conditions of the fisheries and the economic effects including both the economic impacts and economic values (use and nonuse) associated with Snake River fisheries is important in determining various alternatives that would increase the likelihood of achieving specified fish population goals.

B. Geographic Scope of Concern (from fine scale to broad scale)

Same as Economic Issue #1 (Recreation)

C. Forest Service Management Direction

Hells Canyon National Recreation Area, section 7.
Wallowa-Whitman National Forest Plan (W-W FP), Goals, page 4-2, Fish and Wildlife
W-W FP Outputs, page 4-7, Fish and Wildlife Habitat Improvements
W-W FP Outputs, page 4-12, Fish and Wildlife Habitat and Recovery
W-W FP DFCs, page 4-14, Fish Populations
W-W FP, S&Gs, page 4-19, Site Protection
W-W FP S&Gs, pages 4-30/31 T&E Species
W-W FP Monitoring, page 5-13, Costs and Values
W-W FP Monitoring, page 5-10, T&E Species/Fish
W-W FP Monitoring, page 5-67, Costs and Values
SRRMP Management Objectives, page 1, ORVs
SRRMP DFCs, page 2, Diverse Sport Fishery
SRRMP DFCs, page 2, Wildlife View/Inter/Sights

SRRMP DFCs, page 2, Protect and Enhance ORVs
SRRMP DFCs, page 3, ORVs Anadromous Fish
SRRMP DFCs, page 3, ORVs Resident Fish
SRRMP DFCs, page 3, T&E Species
SRRMP S&Gs, pages 16 to 17, Fish and Wildlife
SRRMP Fish and Wildlife Monitoring Appendix D-10 to D-18
SRRMP FEIS Issues page 1-14, Minimize Onshore Degradation
SRRMP FEIS Key Indicators, page 1-14, Protect PETS Species and Habitat
SRRMP FEIS ORVs, page III-12, Wildlife
SRRMP FEIS ORVs, page III-14, Fisheries
SRRMP FEIS ORVs, pages III-18 to 20, Federal Listed and Candidate Species
HCNRA Comprehensive Management Plan 1982 (CMP)
Snake River Recreation Management Objectives/direction, pages 1, 8-11, 26-28
Fisheries Direction, page 13

Economic impact (final demand, employment and personal income) of use of Snake River fisheries
Economic analysis of historic and current hatchery operations, fish production, distribution, costs and effects on wild fish runs
Economic analysis of fish passage alternatives

E. Existing Data

Refer to Aquatic Issue: Aquatic Habitat and Anadromous Salmonid Population Dynamics, (USFS Office, Baker City)
Refer to Aquatic Issue: Aquatic Habitat and Bull Trout Population Dynamics, (USFS Office, Baker City)
Refer to Aquatic Issue: Macroinvertebrate and Mollusks, (USFS Office, Baker City)
Refer to Aquatic Issue: Game Fish, (USFS Office, Baker City)
Refer to Aquatic Issue: Lamprey Below Hells Canyon Dam, (USFS Office, Baker City)
Refer to Aquatic Issue: Sturgeon Below Hells Canyon Dam, (USFS Office, Baker City)
Selected Bibliography of economic value studies for recreation and fish, (USFS Office, Baker City)
Recent and ongoing economic value, expenditure, and impact studies for Lower Snake River Juvenile Migration Feasibility Study (DREW) from Corp of Engineers (Walla Walla Office)
Recent and ongoing economic value, expenditure, and impact studies from Snake River Resources Review (SR3) from Bureau of Reclamation (Boise Office)

F. Data Gaps/Study Needs

Refer to Aquatic Issue: Aquatic Habitat and Anadromous Salmonid Population Dynamics
Refer to Aquatic Issue: Aquatic Habitat and Bull Trout Population Dynamics
Refer to Aquatic Issue: Macroinvertebrate and Mollusks
Refer to Aquatic Issue: Game Fish
Refer to Aquatic Issue: Lamprey Below Hells Canyon Dam
Refer to Aquatic Issue: Sturgeon Below Hells Canyon Dam
Factors (natural and human-caused) affecting fish habitat and populations
Effects of HCC operations and HCC portion of total effects on each fish species habitat conditions and population dynamics
Economic value of sport fishing
Economic value of commercial fishing
Economic value of subsistence tribal use
Nonuse economic value of Snake River fisheries
Economic impact (final demand, employment and personal income) of use of Snake River fisheries
Economic analysis of historic and current hatchery operations, fish production, distribution, costs and effects on wild fish runs
15. Economic analysis of fish passage alternatives

G. Study Methodology/Modeling Application

Fish populations, habitat characterization and effects from operations will be obtained from aquatics studies. Sport economic values and impacts will be obtained from the recreation studies under Economics Issue #1 (Recreation). Estimates of commercial value could be obtained from either producer surplus or market prices of harvested fish. Economic value of tribal use will focus on subsistence use of fisheries (using for example, the cost-avoided approach). Estimates of nonuse values of Snake River fish species would most likely be based on recent (and ongoing) studies, particularly relevant to Upper and Lower Snake River. The benefit-transfer approach would be useful to evaluate applicability of studies not site-specific to the Snake River. Conduct

reconnaissance level analysis of significance of nonuse issue. Use and nonuse values would comprise total economic value of Snake River fisheries.

Economic impacts will be obtained from modeling with input-output models (IMPLAN) at the community, county, and multi-county level as described in the geographic scope of concern. The economic analysis of fish hatcheries will include estimates for the economic cost of hatchery operations and the economic value and impact of hatchery fish use. The economic analysis of fish passage will include estimates for the economic costs and benefits of passage alternatives.

H. Proposed IPC Studies

8.1.4 - Oxbow Bypass Study
8.1.7 - Anadromous Potential within the Mainstem Snake River
8.1.8 - Future Direction of IPC Anadromous Fish Hatchery Program
8.1.9 - Status and Habitat Use of White Sturgeon in the Hells Canyon Complex
8.1.10 - Status, Distribution, and limiting factors of Redband and Bull Trout Associated with HCC
8.1.11 - Hells Canyon Complex Resident Fish Study Plan
8.1.12 - Benthic Macro-invertebrates
8.6.11 - Description of Current Angling Use, Users and Angling Results at reservoirs within the Hells Canyon Complex
8.6.12 - A Description of Angling Use Associated with the Snake River within the HCNRA

I. Integration With Other Forest Service Issues

Recreation (Angling use in reservoirs and Snake River)
Aquatics (Anadromous Salmonids, Bull Trout, Macroinvertebrate and Mollusks, Game Fish, Lamprey, and Sturgeon)

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

To be determined

M. Comments/Notes

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Document 12, continued

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

FERC Economic Issues

A. Issue Statement (Economic Issue #3, Wildlife Habitat and Populations)

The HCNRA supports habitat and populations for a number of proposed, endangered, threatened, or sensitive terrestrial species. Recreationists in the area enjoy wildlife viewing, and photography. In addition, species such as elk, deer, and bighorn sheep are economically important to a wide variety of users including hunters, guides and outfitters, and American Indian tribes. Wildlife is an outstandingly remarkable value (ORV) for the Wild and Scenic Snake and Imnaha Rivers. In addition to economic use value associated with terrestrial species, people may value the knowledge that certain wildlife species (bald eagles for example) exist in the Snake River, completely aside from any current or future use.

Construction of the complex has contributed to the decline and loss of habitat (low elevation big game winter range, riparian habitats), habitat fragmentation, and affected migration routes. Effects of current operations may be limiting travel and genetic exchange (due to reservoir icing and thawing) and affecting populations dependent on riparian habitats (mountain quail, amphibians, reptiles, neotropical birds, etc.).

Project operations should maintain the number and diversity of wildlife species that inhabit the area and be consistent with the protection and enhancement of threatened and endangered species in the river corridor. The habitat and population conditions of terrestrial species and the economic effects including both the economic impacts and economic values (use and nonuse) associated with these species is important in determining various alternatives that would increase the likelihood of achieving recovery and restoration goals.

B. Geographic Scope of Concern (from fine scale to broad scale)

Same as Economic Issue #1 (Recreation)

C. Forest Service Management Direction

Same as Economics Issue #2 (Fish)
Payette National Forest Plan, (PNF) pages IV-25 to 36, Wildlife
PNF IV--129, Wildlife Outputs
PNF IV-139, Management Area 1, Fish and Wildlife
PNF V-7 to 15, Monitoring, Wildlife

D. Information Needed to Analyze the Issue

Terrestrial species population estimates and habitat conditions
- -(Refer to list of species from Terrestrial Issue)
- -estimates of population numbers (both historic and current)
- -life cycle characteristics (relative particularly to Snake River)

-identification of habitat and spawning grounds
-migration patterns
-catch or use areas

Factors (natural and human-caused) affecting terrestrial habitat and populations
Effects of HCC operations and HCC portion of total effects on each species habitat conditions and population dynamics
Economic value of hunting (big game and small game)
Economic value of subsistence tribal use
Economic value of nonconsumptive terrestrial use (viewing, photography, etc.)
Nonuse economic value of Snake River terrestrial species
Economic impact (final demand, employment and personal income) of use of Snake River terrestrial species

E. Existing Data

Refer to Aquatic Issue: Aquatic Habitat and Anadromous Salmonid Population Dynamics, (USFS Office, Baker City)
Refer to Aquatic Issue: Aquatic Habitat and Bull Trout Population Dynamics, (USFS Office, Baker City)
Refer to Aquatic Issue: Macroinvertebrate and Mollusks, (USFS Office, Baker City)
Refer to Aquatic Issue: Game Fish, (USFS Office, Baker City)
Refer to Aquatic Issue: Lamprey Below Hells Canyon Dam, (USFS Office, Baker City)
Refer to Aquatic Issue: Sturgeon Below Hells Canyon Dam, (USFS Office, Baker City)
Selected Bibliography of economic value studies for recreation and fish, (USFS Office, Baker City)
Recent and ongoing economic value, expenditure, and impact studies for Lower Snake River Juvenile Migration Feasibility Study (DREW) from Corp of Engineers (Walla Walla Office)
Recent and ongoing economic value, expenditure, and impact studies from Snake River Resources Review (SR3) from Bureau of Reclamation (Boise Office)

F. Data Gaps/Study Needs

Refer to Terrestrial Issue: PETS Species and species of concern
Factors (natural and human-caused) affecting terrestrial habitat and populations
Effects of HCC operations and HCC portion of total effects on each terrestrial species habitat conditions and population dynamics
Economic value of hunting
Economic value of subsistence tribal use
Nonuse economic value of Snake River terrestrial species
Economic impact (final demand, employment and personal income) of use of Snake River terrestrial species

G. Study Methodology/Modeling Application

Terrestrial populations, habitat characterization and effects from operations will be obtained from terrestrial studies. Hunting economic values and impacts will be obtained from the recreation studies under Economics Issue #1 (Recreation). Economic value of tribal use will focus on subsistence use of hunting (using for example, the cost-avoided approach). Estimates of nonuse values of Snake River terrestrial species would most likely be based on recent (and ongoing) studies. The benefit-transfer approach would be useful to evaluate applicability of studies not site-specific to the Snake River. Conduct reconnaissance level analysis of significance of nonuse issue. Use and nonuse values would comprise total economic value of Snake River fisheries.

Economic impacts will be obtained from modeling with input-output models (IMPLAN) at the community, county, and multi-county level as described in the geographic scope of concern.

H. Proposed IPC Studies

8.2.3 - A Description of the Raptor Community Nesting in Hells Canyon
8.2.5 - A Description of the Bat Community in Hells Canyon
8.2.6 - Distribution and Abundance of Wintering Bald Eagles in Hells Canyon
8.2.7 - Distribution of Nest Sites and Productivity of Nesting Peregrine Falcons in the Hells Canyon Study Area
8.2.8 - A Description of State and Federal Sensitive Wildlife Species in Hells Canyon
8.2.13 - Distribution and Abundance of Sage and Sharp-tailed Grouse in Hells Canyon and associated transmission line corridors
8.2.16 - Distribution and Relative Abundance of Mammalian Carnivores and Furbearers in Hells Canyon
8.2.17 - Survey of Wolverine Dens in the Seven Devils of Hells Canyon
8.2.18 - Nongame Wildlife Habitat Measurements
8.2.20 - Habits of Bald Eagles Wintering in Northeastern Oregon and Adjacent Areas of Washington and Idaho
8.2.21 - Validation of a Mountain Quail Survey Technique
8.2.22 - Movements, Habitat Use and Population Characteristics of Mountain Quail in West Central Idaho: Big Canyon Creek
8.2.25 - Effects of Water Level Fluctuations on Threatened and Endangered Species: Bald Eagle (in 8.2.23)
8.2.26 - Effects of Water Level Fluctuations on Wildlife on Species of Special Concern (in 8.2.23)
8.2.30 - Effects of Roads and Transmission Line Corridors on Wildlife Habitat of Threatened and Endangered Species and Species of Special Concern
8.2.31 - Effects of Human Recreational Activities on Nesting Peregrine Falcons in the Hells Canyon Study Area (will be incorporated into study 8.5.4)
8.2.32 - Effects of Human Recreational Activities on Wintering Bald Eagles in the Reservoir Reaches of the Hells Canyon Study Area (will be incorporated into study 8.5.4)
8.2.33 - Effects of Human Recreation Activities on the Distribution and Relative Abundance of Townsend's Big-eared Bats and Spotted Bats in the Unimpounded Reach of Hells Canyon
8.2.43 - A survey of Suitable Habitat for the Idaho Ground Squirrel
8.3.2 - Inventory of Threatened, Endangered and Sensitive Plant Species along the Snake River, Weiser, Idaho to Salmon River
8.3.7 - Effects of Water Level Fluctuations Resulting from Operation of the Hells Canyon Complex upon Threatened, Endangered and Sensitive Plant Species
8.3.8 - Effects of Roads and Transmission Line Right-of-Ways on Threatened, Endangered and Sensitive Plant Species
8.6.13 - A Description of Hunting Pressure within the Hells Canyon Complex

I. Integration With Other Forest Service Issues

Recreation (hunting use along reservoirs and Snake River)
Terrestrial Issue: PETS Species and species of concern

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

To be determined

M. Comments/Notes

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Document 12, continued

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

FERC Economic Issues

A. Issue Statement (Economic Issue #4, Heritage Resources)

The Snake River, especially below Hells Canyon Dam, has a significant number of archaeological properties. The area contains one of the richest accumulations of riverine archaeological resources in western North America. A number of these sites were inundated by the reservoir after construction. Sites have been damaged or destroyed by vandalism, powerline construction and operation/maintenance, flow fluctuations and downstream erosion, and flow levels and wave actions in the reservoir. The overall archaeological, cultural and historic significance of the remaining discovered and undiscovered sites is greatly enhanced as an important, irreplaceable resource. Prehistoric and historic cultural resources are outstandingly remarkable values for the Wild and Scenic Snake and Imnaha rivers. The type and extent of the archaeological properties and the socio-economic effects including both the nonuse economic value, social value and costs and benefits is important to finding alternative means of protecting these sites.

B. Geographic Scope of Concern

Same as Economic Issue #1 (Recreation)

C. Forest Service Management Direction

Hells Canyon National Recreation Area, section 7.
Wallowa-Whitman National Forest Plan (W-W FP), Goals, page 4-1, Cultural Resources
W-W FP Outputs, page 4-6, Cultural Resource Management
W-W FP S&Gs, page 4-19, Cultural Resources
W-W FP Monitoring, page 5-12, Cultural Resources
W-W FP Monitoring, page 5-13, Costs and Values
W-W FP Monitoring, page 5-64, Cultural and Historic Site Protection
W-W FP Monitoring, page 5-67, Costs and Values
SRRMP Management Objectives, page 1, ORVs
SRRMP DFCs, page 2, Protect and Enhance ORVs
SRRMP DFCs, page 3, Archaeological Resources
SRRMP Cultural and Historic Sites Monitoring Appendix D-8
SRRMP FEIS Issues, page 1-14, Minimize Onshore Degradation
SRRMP FEIS Key Indicators, page 1-15, Recreation Use on Cultural Resources
SRRMP FEIS ORVs, page III-17, Prehistoric and Historic
HCNRA Comprehensive Management Plan 1982 (CMP)
Snake River Recreation Management Objectives/Direction, pages 1, 8-11, 26-28
Cultural resources, pages 16-18
Payette National Forest Plan, (PNF) pages IV-3 to 8, Cultural Resources
PNF IV-137, Management Area 1, Cultural Resources
PNF V-6, Monitoring, Cultural Resources

D. Information Needed to Analyze the Issue

Presence or absence of prehistoric and historic cultural resources located within and adjacent to the river corridor, powerline corridors, and the Hells Canyon reservoir.
Significance of cultural resources
Condition of sites and the degree to which resources have been impacted by powerline operation and maintenance, beach erosion, and fluctuating flows and wave action.
Extent of properties used by recreationists and degree of damage to resources by recreation activities
Nonuse social and economic value of cultural resources
Costs and benefits of protecting cultural resources

E. Existing Data

W-W NF Cultural Resource Database (USFS Office, Enterprise)
Idaho Power Company cultural resource surveys and reports
Beach erosion study, Grams and Schmidt 1991, (USFS Office, Enterprise)
Aerial photos from 1950s to present (USFS office, Enterprise)
USGS Sediment Studies along the Snake River (USGS Office)
Gordon Grant, Research Hydrologist, USFS PNW, Corvallis, OR. (Is conducting a sediment and channel morphology study on Deschutes River)
Extrapolated empirical data on sediment loads (USGS, IPC)
Recreation use of river (USFS Office, Clarkston, WA)
Recreation use of reservoir (IPC)
Selected bibliography of economic value studies (USFS Office, Baker City)

F. Data Gaps/Study Needs

Presence or absence of prehistoric and historic cultural resources located within and adjacent to the river corridor, powerline corridors, and the Hells Canyon reservoir.
Significance of cultural resources
Condition of sites and the degree to which resources have been impacted by powerline operation and maintenance, beach erosion, and fluctuating flows and wave action.
Extent of properties used by recreationists and degree of damage to resources by recreation activities
Nonuse social and economic value of cultural resources
Costs and benefits of protecting cultural resources

G. Study Methodology/Modeling Application

Determine the presence or absence of prehistoric and historic cultural resources located within and adjacent to the river corridor, powerline corridors, and the Hells Canyon reservoir. Determine the significance of cultural resources, the condition of sites and the degree to which resources have been impacted by powerline operation and maintenance, beach erosion, fluctuating flows, wave action, and recreation activities. Determine nonuse economic value of cultural resources and estimate economic costs and benefits of strategies for protecting the resource.

H. Proposed IPC Studies

8.4.1 - Archaeological Inventories - Hells Canyon Complex Transmission Lines
8.4.2 - Archaeological Inventories - Brownlee, Oxbow, Hells Canyon Reservoirs
8.4.3 - Archaeological Inventories - Below Hells Canyon Dam
8.4.4 - Euro-Asian Oral History Study-Hells Canyon, Oxbow, and Brownlee Area
8.4.5 - Native American Oral History Study-Hells Canyon, Oxbow, and Brownlee Area

8.4.7 - Effects of Reservoir Water Level Fluctuations on Cultural Resources
8.4.8 - Effects of River Water Level Fluctuations on Cultural Resources
8.6.1 - A Review of Past Recreation Issues and Use in the Hells Canyon Recreation Complex
8.6.2 - A Description of Current and Potential Recreational Use and Users Associated with Reservoirs within the Hells Canyon Complex
8.6.3 - A Description of Current and Potential Recreational Use and Users Associated with the Snake River within the HCNRA
8.6.4 - An Investigation into the Current and Potential Physical and Social Conflicts Associated with Recreational Use and Recreational Carrying Capacity of the Hells Canyon Complex
8.6.5 - A Description of the Impacts of Reservoir Water Fluctuations within the Hells Canyon Recreation Complex on Navigation, Recreational Opportunities, Amount of Recreational Use and Quality of Recreational Experience
8.6.6 - A Description of the Impacts of Project-Induced River Water level Fluctuations within the HCNRA on navigation, recreational opportunities, amount of recreational use, and quality of recreational experience.
8.6.7 - An Inventory of Existing Dispersed Recreational Access Sites Associated with the reservoirs within the Hells Canyon Complex, Recreational Use as those Sites, and Attitudes about Dispersed Access
8.6.8 - An Inventory of Existing, River-related Dispersed Recreational Access Sites within the HCNRA, Recreational Use at those Sites, and Attitudes about Dispersed Access
8.6.9 - An Evaluation of Current (1997-2000) and Potential Recreational Use at Major Developed Sites on Reservoirs within the Hells Canyon Complex
8.6.10 - An Evaluation of User's Attitudes about and Expectations of Major Developed Sites and Facilities on Reservoirs within the Hells Canyon Complex
8.6.11 - Description of Current Angling Use, Users and Angling Results at reservoirs within the Hells Canyon Complex
8.6.12 - A Description of Angling Use Associated with the Snake River within the HCNRA
8.6.13 - A Description of Hunting Pressure within the Hells Canyon Complex

I. Integration With Other Forest Service Issues

Recreation (carrying capacity, use, impacts, and projected future use trends)
Aquatics (Sediment Routing and Transport)

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

To be determined

M. Comments/Notes

Proposed by Elaine Kohrman
Edited by Myrna L. Evans 9/1/98, 9/22/98, 10/15/98

Document 12, continued

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

FERC Economic Issues

A. Issue Statement (Economic Issue #5, Tribal Trust Responsibilities)

The Snake River plays an important role in the cultural, social, and religious life of American Indian tribes. By virtue of the treaties of 1855, certain rights and privileges are afforded members of the Nez Perce and Umatilla Confederated Indian Tribes on what is now the Wallowa-Whitman National Forest. The treaties maintain that these tribes "will continue to have the rights of taking fish in streams running through and bordering the reservations and at all other usual and accustomed stations in common with other citizens of the United States and of erecting suitable buildings for fish curing; the privilege of hunting, gathering roots and berries, and pasturing stock on unclaimed lands" (Forest Plan 1990). Hells Canyon Complex operations that affect resources such as fish, wildlife, and riparian areas must be consistent with trust responsibilities and ceded land rights in regard to managing the natural resources the treaties depend on.

B. Geographic Scope of Concern

Nez Perce Tribe
Confederated Tribes of Umatilla Indian Reservation
Confederated Tribes and Bands of Yakama Indian Nations
Confederated Tribes of Warm Springs Reservation of Oregon
Shoshone-Paiute Tribes
Shoshone-Bannock Tribes
Columbia River Intertribal Fish Commission

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7.
Wallowa-Whitman National Forest Plan (W-W FP) S&Gs, page 4-19, Ceded Lands/Treaties
W-W FP S&Gs, page 4-19, Native Am. Indian Access
W-W FP S&Gs, page 4-19, Coordination
W-W FP Monitoring, page 5-12, Cultural Resources
SRRMP DFCs, page 3, Archaeological Resources
SRRMP Cultural and Historic Sites Monitoring Appendix D-8
Desk Guide to Tribal Government Relations, Second Edition, 1998. U.S. Department of Agriculture, Forest Service, Pacific Northwest Region.
Executive Order 13084-"Consultation and Coordination with Indian Tribal Governments", 5/14/98, President Clinton.

D. Information Needed to Analyze the Issue

Historical and current subsistence uses, commercial uses, cultural, spiritual, and religious values associated with natural resources in reservoir and Snake River and adjacent areas (refer to treaty rights)
Social and economic value of uses where appropriate

Extent of project operations effects on these uses and values

E. Existing Data

HCNRA Draft Environmental Impact Statement for Comprehensive Management Plan (USFS Office, Baker City)
ICBEMP Scientific Assessment (USFS Office, Baker City)
Selected bibliography of studies related to treaty rights, responsibilities, and values (USFS Office, Baker City)
Final Environmental Impact Statement, Wild and Scenic Snake River Recreation Management Plan

F. Data Gaps/Study Needs

Historical and current subsistence uses, commercial uses, cultural, spiritual, and religious values associated with natural resources in reservoir and Snake River and adjacent areas (refer to treaty rights)
Social and economic value of uses where appropriate
Extent of project operations effects on these uses and values

G. Study Methodology/Modeling Application

Characterize treaty rights, and tribal uses and values in terms of subsistence, commercial, cultural, spiritual, and religious context for Hells Canyon Complex and Hells Canyon National Recreation Area. Estimate economic value of uses where appropriate and applicable. Determine extent of project operations (flows, sediment, transmission lines, operation and maintenance activities, access) and effects on these uses and values.

H. Proposed IPC Studies

8.4.5 - Native American Oral History Study-Hells Canyon, Oxbow, and Brownlee Area
8.4.7 - Effects of Reservoir Water Level Fluctuations on Cultural Resources
8.4.8 - Effects of River Water Level Fluctuations on Cultural Resources

I. Integration With Other Forest Service Issues

Heritage (historic and prehistoric properties)
Economic Issue #2 (Fish Habitat and Populations)

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

To be determined

M. Comments/Notes

Proposed by Elaine Kohrman
Edited by Myrna L. Evans 9/1/98, 9/22/98, 10/15/98

Document 12, continued

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

FERC Economic Issues

A. Issue Statement (Economic Issue #6, Protection, Mitigation and Enhancement)

The formal consultation package for the Hells Canyon Complex relicensing identifies a number of existing protection, mitigation, and enhancement measures that affect aquatic, terrestrial, and terrestrial resources on the Snake River. Estimates of past and current economic costs and benefits and economic impacts associated with these measures is important in determining consistency with Forest Plan goals and objectives for the Snake River.

B. Geographic Scope of Concern

Same as Economic Issue #1 (Recreation)

C. Forest Service Management Direction

Hells Canyon National Recreation Area, section 7.
Wallowa-Whitman National Forest Plan (W-W FP), Outputs, page 4-8 Costs/Returns
W-W FP Monitoring, page 5-12 Budget/Costs
W-W FP Monitoring, page 5-66 Budgets
SRRMP FEIS Key Indicators, page 1-13 River Management Costs
HCNRA Comprehensive Management Plan (1982) and current planning in revision
PNF IV-111, Hydroelectric Power
PNF V-3, Monitoring Costs
PNF V-47, Monitoring Land Uses

D. Information Needed to Analyze the Issue

Costs and benefits of hydroelectric power production, operation and maintenance
Costs and benefits of protection, mitigation, and enhancement measures
Economic impact of operations, maintenance, and protection, mitigation, and enhancement (PME) measures

E. Existing Data

HCC costs of operation and maintenance (IPC)
HCC costs of protection, mitigation, and enhancement measures (IPC)
Economic base line data for scope of concern for economic impact modeling (state and federal agencies)
IMPLAN models for coinciding areas within scope of concern (Corp of Engineers, Walla Walla, WA; and Bureau of Reclamation, Boise, ID)

F. Data Gaps/Study Needs

Benefits of operation and maintenance
Benefits of protection, mitigation, and enhancement measures
Input-Output (IMPLAN) models for community, county, and multi-county areas within geographic scope of concern

G. Study Methodology/Modeling Application

Estimate past and current economic costs and benefits associated with operation, maintenance, protection, mitigation, and enhancement measures. Estimate base line economic impact from these measures.

H. Proposed IPC Studies

None

I. Integration With Other Forest Service Issues

Recreation (PMEs)
Heritage (PMEs)
Aquatic (PMEs)
Terrestrial (PMEs)

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

To be determined

M. Comments/Notes

Proposed by Elaine Kohrman
Edited by Myrna L. Evans 9/1/98, 9/22/98, 10/15/98

Document #13

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ANALYSIS

Heritage Resources

The following issue was developed by Idaho Power Company (IPC) and the Forest Service through participation in the collaborative/terrestrial work group process. The identification of the this issue was driven primarily by federal mandates such as Section 106 and 110 of the National Historic Preservation Act as amended 1980, and the Archaeological Resource Protection Act of 1979. Those issues can be summarized as follows:

A. Issue Statement No. 1

Determine the cumulative impacts to discovered and undiscovered archaeological properties from construction and operation/maintenance of transmission line corridors.

B. Geographic Scope of Concern

All IPC transmission corridors located on National Forest lands within the study area.

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7 (PL94-199)

Wallowa-Whitman Forest Plan. Goal, page 4-19, Cultural - To provide for the identification, protection, preservation, enhancement and interpretation of prehistoric and historic sites, buildings, objects, and antiquities of local, regional, or National significance so as to preserve their historical, cultural, and scientific values for the benefit of the public. Wallowa-Whitman Forest Plan Standards And Guidelines Page 4 - 19, 2. **Research Design**. Maintain a forest research design to guide cultural resource surveys, establish site significance, and establish priorities for scientific investigation and opportunities for interpretation. Page 4 - 20, 3. **Inventory.** Conduct Forest-wide cultural resource inventories (survey and site recognition) according to strategies and consultation procedures established on the Forest. Emphasize areas where ground disturbing activities are planned, to ensure discovery of all reasonably locatable cultural resources. Page 4 - 20, 4. **Evaluation.** Evaluate cultural resources that may be affected by project activities. Page 4 - 20, 6. **Protection**. Protect the resources considered

eligible for the national Register of Historic Places by making reasonable efforts to avoid adverse impacts to the resource or develop a procedure to conserve the values through proper scientific methods and study. Page 4 - 20, 8. Protect eligible cultural resources from human degradation and natural destruction. Protection plans may include physical protection such as fences and barriers, scientific study and collection, patrol and site monitoring. Page 4 - 20, 13.
Conflicts with Other Activities, When other resource management activities conflict with the protection and management of cultural resource properties, the sites will be evaluated to determine their significance. Depending on the nature of the project, the activity may be redesigned to avoid damage or disturbance to a significant site, or damage otherwise mitigated, In instances where avoidance is not possible, the value of ths thw(may be rection aues thance to t)Tj1.065 -1.15 TD-0.0003 Tc0.

1982 HCNRA Comprehensive Management Plan. Management Objective: Protect and preserve cultural resource values for this and future generations.

Code of Federal Regulations, Sub Part F-Hells Canyon National Recreation Area-Federal Lands, 36 CFR 292.43
(1) The primary objective of managing cultural resources is the protection of the resource from damage or destruction.....

D. Information Needed to Analyze the Issue/Questions

Determine the presence or absence of prehistoric and historic cultural resources located within and immediately adjacent to IPC transmission line corridors.
Determine the significance of cultural resources associated with transmission line corridors.
Determine the degree to which previously identified and recently discovered cultural resources have been impacted by transmission line operation and maintenance.

E. Existing Data

IPC has completed sample, cultural resource surveys for all Hells Canyon Project transmission line corridors located on the Wallowa-Whitman National Forest. These surveys were completed in the fall and winter of 1997.
Cultural resource data base for the Wallowa-Whitman N.F.
Data is located at Wallowa-Whitman National Forest Headquarters, Baker City, Oregon and Idaho Power Company, Boise, Idaho.

F. Data Gaps/Study Needs

None identified to date.

G. Study Methodology/Modeling Application

To be determined.

H. Proposed Idaho Power Studies

8.4. Historical and Archaeological

8.4.1. Title: Archaeological Inventories-Hells Canyon Complex Transmission Lines.

I. Integration with Other Forest Service Issues

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

M. Comments/Notes

Created by Bruce Womack
Edited by Myrna L. Evans 8/28/98, 10/14/98

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ANALYSIS

Heritage Resources

The following issue was developed by Idaho Power Company (IPC) and the Forest Service through participation in the collaborative/terrestrial work group process. The identification of the this issue was driven primarily by federal mandates such as Section 106 and 110 of the National Historic Preservation Act as amended 1980, and the Archaeological Resource Protection Act of 1979.

A. Issue Statement No. 2

Determine potential impacts downstream to listed archaeological properties from flow regulation activities.

B. Geographic Scope of Concern:

The Wild and Scenic Snake River Corridor from Hells Canyon Dam north to the mouth of the Salmon River.

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7 (PL94-199)

Wallowa-Whitman Forest Plan Goal, page 4-19, Cultural - To provide for the identification, protection, preservation, enhancement and interpretation of prehistoric and historic sites, buildings, objects, and antiquities of local, regional, or National significance so as to preserve their historical, cultural, and scientific values for the benefit of the public.

Wallowa-Whitman Forest Plan Standards And Guidelines

Page 4-19, **Cultural**. To provide for the identification, protection, preservation, enhancement and interpretation of prehistoric and historic sites, buildings, objects, and antiquities of local, regional, or National significance so as to preserve their historical, cultural, and scientific values for the benefit of the public. Page 4 - 19, 2. **Research Design**. Maintain a forest research design to guide cultural resource surveys, establish site significance, and establish priorities for scientific investigation and opportunities for interpretation.

Page 4 - 20, 3. **Inventory.** Conduct Forest-wide cultural resource inventories (survey and site recognition) according to strategies and consultation procedures established on the Forest. Emphasize areas where ground disturbing activities are planned, to ensure discovery of all reasonably locatable cultural resources.
Page 4 - 20, 4. **Evaluation.** Evaluate cultural resources that may be affected by project activities.
Page 4 - 20, 6. **Protection**. Protect the resources considered eligible for the national Register of Historic Places by making reasonable efforts to avoid adverse impacts to the resource or develop a procedure to conserve the values through proper scientific methods and study.
Page 4 - 20, 8. Protect eligible cultural resources from human degradation and natural destruction. Protection plans may include physical protection such as fences and barriers, scientific study and collection, patrol and site monitoring.
Page 4 - 20, 13. **Conflicts with Other Activities,** When other resource management activities conflict with the protection and management of cultural resource properties, the sites will be evaluated to determine their significance. Depending on the nature of the project, the activity may be redesigned to avoid damage or disturbance to a significant site, or damage otherwise mitigated, In instances where avoidance is not possible, the value of the property may be conserved through a professionally acceptable data recovery program.
4 - 21, 14. **Coordination.** Coordinate management of cultural resources with other agencies including the State Historic Preservation Offices (Idaho & Oregon) and the Advisory Council on Historic Preservation, as required by Federal and State historic preservation laws and regulations.
Page 4 - 21, 16. Present information about planned project activities to American Indian groups.
Page 4 - 21, 18. Ensure that cultural resource properties and their records are protected to prevent unauthorized uses and degradation.

Payette Forest Plan

Goals And Objectives For Cultural Resource Management, Page IV-3; **GOAL:** Identify and manage significant cultural resources and areas of Native American religious importance. **OBJECTIVES:** Protect significant cultural resource properties from vandalism and other human depredation, and from natural destruction. Modify project plans to avoid damage to or destruction of significant cultural resources and sites. Complete compliance with the national Historic Preservation Act, as amended, and 36 CAR 800 during the project planning phase or before authorizing issuance of permits or licenses. Consider areas important to Native American traditional religious practices and consult with traditional religious practices and consult with traditional religious practices and consult with traditional religious leaders.

Final Environmental Impact Statement (FEIS)
Wild And Scenic Snake River Recreation Management Plan

The Snake River within Hells Canyon is designated as a wild and scenic river under the Wild and Scenic Rivers Act. The archaeological and historic heritage resources in Hells Canyon are one of the outstandingly remarkable values for which the river was designated.

Per " SEC. 10 (a) Each component of the national wild and scenic rivers system shall be administered in such a manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values. In such administration primary emphasis shall be given to protecting its esthetic, scenic, historic, archaeologic, and scientific values.

1982 HCNRA Comprehensive Management Plan

Management Objective: Protect and preserve cultural resource values for this and future generations.

Code of Federal Regulations, Sub Part F-Hells Canyon National Recreation Area-Federal Lands, 36 CFR 292.43
(1) The primary objective of managing cultural resources is the protection of the resource from damage or destruction.....

D. Information Needed to Analyze the Issue

An updated archaeological inventory of the wild and scenic river corridor (ongoing) will help determine the extent of impact to heritage resources from flow regulation. As for whether flow regulation impacts near-river edge sites, **t**here is currently adequate information in the form of existing beach erosion studies.

E. Existing Data

1. Beach Erosion Study by CH2M-Hill.

2. MA Thesis documenting beach erosion at Upper Pittsburg and other sites within the corridor.

F. Data Gaps/Study Needs

Per the consultation package for relicensing, one objective of Study 8.4.3. Archaeological Inventories-Below Hells Canyon Dam, is to assess the impacts to archaeological properties from recreation. This study, which is ongoing, is not designed to collect the data which will be necessary to assess the impacts associated with project-induced recreation use.

G. Study Methodology/Modeling Application

To be determined.

H. Proposed Idaho Power Studies

8.4. Historical and Archaeological

8.4.3. Title: Archaeological Inventories-Below Hells Canyon Dam: Implementation of this particular study is currently underway. To be conducted in two phases. Phase 1 was completed in the spring and early summer of 1998. Phase 2 will begin in September 1998.

8.4.8. Title: Effects of River Water Level Fluctuations on Cultural Resources: IPC is currently undertaking an archaeological testing and evaluation program at two sites, the Tin Shed (Upper Pittsburg) and Camp Creek, both on the Oregon side of the Snake River. This program will likely lead to much more expansive data recovery excavations at the two sites in question. IPC will undertake data recovery.

I. Integration with Other Forest Service Issues

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

M. Comments/Notes

Created by Bruce Womack
Edited by Myrna L. Evans 8/28/98, 10/14/98

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ANALYSIS

Heritage Resources

The following issue was developed by Idaho Power Company (IPC) and the Forest Service through participation in the collaborative/terrestrial work group process. The identification of the this issue was driven primarily by federal mandates such as Section 106 and 110 of the National Historic Preservation Act as amended 1980, and the Archaeological Resource Protection Act of 1979.

A. Issue Statement No. 3

Determine the potential impacts to discovered and previously undiscovered archaeological properties due to fluctuation of reservoir levels and wave action.

B. Geographic Scope of Concern

Hells Canyon Reservoir, High water Line to low Water line Oregon and Idaho sides

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7 (PL94-199)

Wallowa-Whitman Forest Plan Standards And Guidelines

Page 4-19, **Cultural**. To provide for the identification, protection, preservation, enhancement and interpretation of prehistoric and historic sites, buildings, objects, and antiquities of local, regional, or National significance so as to preserve their historical, cultural, and scientific values for the benefit of the public.
Page 4 - 19, 2. **Research Design**. Maintain a forest research design to guide cultural resource surveys, establish site significance, and establish priorities for scientific investigation and opportunities for interpretation.
Page 4 - 20, 3. **Inventory.** Conduct Forest-wide cultural resource inventories (survey and site recognition) according to strategies and consultation procedures established on the Forest. Emphasize areas where ground disturbing activities are planned, to ensure discovery of all reasonably locatable cultural resources.
Page 4 - 20, 4. **Evaluation.** Evaluate cultural resources that may be affected by project activities.
Page 4 - 20, 6. **Protection**. Protect the resources considered eligible for the national Register of Historic Places by making reasonable efforts to avoid

adverse impacts to the resource or develop a procedure to conserve the values through proper scientific methods and study.
Page 4 - 20, 8. Protect eligible cultural resources from human degradation and natural destruction. Protection plans may include physical protection such as fences and barriers, scientific study and collection, patrol and site monitoring.
Page 4 - 20, 13. **Conflicts with Other Activities,** When other resource management activities conflict with the protection and management of cultural resource properties, the sites will be evaluated to determine their significance. Depending on the nature of the project, the activity may be redesigned to avoid damage or disturbance to a significant site, or damage otherwise mitigated, In instances where avoidance is not possible, the value of the property may be conserved through a professionally acceptable data recovery program.
4 - 21, 14. **Coordination.** Coordinate management of cultural resources with other agencies including the State Historic Preservation Offices (Idaho & Oregon) and the Advisory Council on Historic Preservation, as required by Federal and State historic preservation laws and regulations.
Page 4 - 21, 16. Present information about planned project activities to American Indian groups.
Page 4 - 21, 18. Ensure that cultural resource properties and their records are protected to prevent unauthorized uses and degradation.

Payette Forest Plan

Goals And Objectives For Cultural Resource Management, Page IV-3; **GOAL:** Identify and manage significant cultural resources and areas of Native American religious importance. **OBJECTIVES:** Protect significant cultural resource properties from vandalism and other human depredation, and from natural destruction. Modify project plans to avoid damage to or destruction of significant cultural resources and sites. Complete compliance with the national Historic Preservation Act, as amended, and 36 CAR 800 during the project planning phase or before authorizing issuance of permits or licenses. Consider areas important to Native American traditional religious practices and consult with traditional religious practices and consult with traditional religious practices and consult with traditional religious leaders.

1982 HCNRA Comprehensive Management Plan

Management Objective: Protect and preserve cultural resource values for this and future generations.

Code of Federal Regulations, Sub Part F-Hells Canyon National Recreation Area-Federal Lands, 36 CFR 292.43
(1) The primary objective of managing cultural resources is the protection of the resource from damage or destruction.....

D. Information Needed to Analyze the Issue

Determine the presence or absence of prehistoric and historic cultural resources within Hells Canyon Reservoir, low water line to high water line.
Determine the degree to which historic and prehistoric cultural resources have been impacted by beach erosion and wave action.
Cultural resource surveys of reservoir areas must be conducted during low reservoir stands or draw-downs for this type of survey to be effective.

E. Existing Data

Columbia Basin Project, River Basin Surveys, Smithsonian Institution. 1951.

The Final Report on the Archaeological Reconnaissance at Hells Canyon on the Snake River between Idaho and Oregon, 1963.

Beyond these early efforts which are sketchy at best and wholly inadequate for this task, there are no systematic surveys for the Hells Canyon Reservoir.

Reports on file HCNRA Heritage Resource Office, Enterprise OR.

F. Data Gaps/Study Needs

G. Study Methodology/Modeling Application

To be determined

H. Proposed Idaho Power Studies

8.4. Historical and Archaeological

8.4.2. Title: Archaeological Inventories-Brownlee, Oxbow and Hells Canyon Reservoirs. There is currently no study plan developed for this proposed study.

I. Integration with Other Forest Service Issues

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

M. Comments/Notes

Created by Bruce Womack
Edited by Myrna L. Evans 8/28/98, 10/15/98

Document #14

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 5, 1998

INFORMATION NEEDS ANALYSIS

Recreation Use (Physical and Social Environment)

A. Issue Statement (Issues #1)

Current recreation use and users are stressing the physical and social environment in the Hells Canyon Complex.

Regulated flows from the dam have induced and expanded the recreation opportunities on the river, (primarily powerboating and floating), lengthened the season of use and created impacts to the physical and social environment

Increased recreation use is causing cumulative impacts on prehistoric sites by users who are camping on or adjacent to them

The amount and type of recreational use may be negatively affecting existing proposed, endangered, threaten5(ngl (P2(E2(s2(TS6(mbie S,thenl u)5.2(c)-3i(lative)]TJ521054 0 TD-0.0002 Tc-0.0022 Twnt ad,

FP DFCs page 4-14, Trail Maintenance; FP S&Gs, page 4-35, Trail Access; FP MA 4, page 63 Wilderness; SRP ORVs, page 111-10, Snake River Trail; FP MA 13, page 4-8, Homestead Plan Area, wilderness study area; FP MA 9, pages 4-79 to 81, Forage/Recreation; FP MA 10, pages 4-81 to 83, Disp. Recreation; Snake River Plan EIS 111-9 to 10, IV9, SRP Monitoring Plan Appendix J-1 to J-7.

D. Information Needed to Analyze the Question/Issue

Campsite locations and conditions
Prehistoric sites location, type, and condition

E. Existing Data

Use data from previous years (Clarkston and Baker City offices) Heritage Resource Inventories 1978 (Enterprise office) LAC and site condition inventories from previous years (Clarkston)

Existing historical books on the subject. Example: Elmer Earl's book documents a much shorter season as the river used to freeze during the winter.

F. Data Gaps/Study Needs

Overlaps and conflicts of recreation sites with prehistoric sites Site conditions inventories and sampling Recreation user surveys as well as comparing our situation with studies from other areas

G. Study Methodology/Modeling Application

Overlay GIS layers of campsites and prehistoric sites
Determine sample of impacted sites or range

H. Proposed IPC Studies

Prehistoric Site Sampling
Recreation Study 8.6.3
Recreation Study 8.6.4
Recreation Study 8.6.8

I. Integration with Other Forest Service Issues

Prehistoric site impacts

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

M. Notes/Comments

Prepared by Linda McFaddan, Linda Brandvold, and Gay Ernst Edited by Myrna L. Evans 8/28/98, 9/1/98, 10/15/98

Document #15

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 5, 1998

INFORMATION NEEDS ANALYSIS

Recreation Use (Project Operations)

A. Issue Statement (Issue #2)

Project operations impact recreation use in the Hells Canyon Complex and adjacent area.

Beach erosion is reducing carrying capacity (e.g., campsite availability for dispersed camping), which may be affecting the type of use (fishing, hunting, sight-seeing), and cause a need to limit use numbers in the future

The quality of the recreation experience is being reduced by beach/bench erosion (e.g., crowding at fewer campsites and increased social encounters). Reduced availability of campsites and quality of sites may create conflicts between float and powerboat needs for campsites.

Daily and overnight flow fluctuations may be affecting the carrying capacity, type of use (fishing, hunting, etc.), and use numbers in the river corridor.

Seasonal flow fluctuations for drawdown of the reservoirs may be affecting the carrying capacity of the primary operating season (end of May-Sept. 10), type of use (fishing, hunting, etc.), and may impact private and commercial river use.

The quality of the recreation experience is being reduced by daily, overnight, and seasonal flow fluctuations (swamping or stranding rivercraft at overnight campsites, and creating safety hazards at difficult rapids).

Potential displacement of recreationists due to decreased carrying capacity (lack of camping sites, too high/low flows) and use. Limitations may stress the carrying capacity of sites outside of the river corridor (Wilderness, HCNRA, Payette, W-W).

Flow fluctuations have contributed to erosion on trails, deposited debris, created dangerous conditions, and the need for additional trail maintenance.

The lack of beaches due to erosion is negatively impacting visual quality within the corridor.

Powerlines associated with the Hells Canyon Complex are negatively affecting scenic integrity and landscape character in the Snake River corridor, the Imnaha Wild and Scenic River Corridor, from the Dam to Oxbow along the 454 Road, and in the HCNRA.

Risk of seismic activity in the Hells Canyon Dam Complex area may compromise safety of downstream users, including recreationists, permittees, outfitters, and private land holders within HCNRA and other national forest lands.

B. Geographic Scope

Brownlee Dam area, Halfway, Oxbow; Hells Canyon Dam, seismic risk

C. Forest Plan Management Direction

FP AMS, page 2-1 Recreation; FP Goal, page 4-2 Recreation; FP Outputs, pages 4-6/7, Recreation; FP DFCs, page 4-14 Dispersed Rec.; FP S&Gs, page 4-38 to 42, Recreation; FP MA 8, pages 4-76/77; HCNRA WSRFP Monitoring, page 5-11; Wild & Scenic River SRP Issues, page S-2 Intended Experience; SRP Key Indicators, page S-3 Access; SRP Key Indicators, page S-3 Remoteness; SRP Key Indicators, page S-3 Social Encounters; SRP Key Indicators, page S-3

Visitor Managment; SRP Key Indicators, page S-3 Fairness/equity; SRP Issues, page S-3 Onshore Degradation; SRP Key Indicators, page S-4 Impacts to T/EFP Monitoring, page 5-12 Recreation Setting; FP Outputs, page 4-6, Visual Quality; FP Goals, page 4-10 Landscapes; FP S&Gs, pages 442 to 44, Landscapes; FP MA 4, page 4-63 Wilderness; Preservation; FP Monitoring, page 5-12, Visual Quality; FP MA 11, page 4-81, Disp. Rec/Landscape; FP MA 7, pages 4-71 to 75; Imnaha WSRFP App. B, page B-1/3 Visual Sensitive Routes; Snake River Plan (SRP) & CMP--Provides for power boat and floating use of Snake River, both commercial and private, powerboat and floatboat launches at Hells Canyon Creek and Pittsburg, and Dug Bar, developed campground at Pittsburg. Administrative and visitor contact sites at Hells Canyon launch, Pittsburg Lands, Cache Creek, Kirkwood, numerous dispersed campsites downstream from Hells Canyon Launch. Developed trail system along River Corridor. IPC road and Hells Canyon launch road serves public access. Several private land sections along lower Snake River Corridor. Direction is to provide for safe use of river, recreation facilities, trails, and roads. EIS for SRP, outstandingly remarkable values (ORVs), pages III-10 and 11, Recreation: Direction is to maintain and enhance river recreation as an outstanding and remarkable value.

D. Information Needed to Analyze the Issue/Questions

Extent of beach erosion from river flows Current carrying capacity and use by type of use and location of use Potential future use by type and activity and location Recreation growth on the river and potential growth in reservoirs Seismic hazard: Seismicity in Hells Canyon Dam complex area Probability of earthquake occurrence and intensity and magnitude Need to date records of earthquake events magnitudes and epicenters. Clusters of known earthquakes occur along the Oregon-Idaho border, Halfway- Pine-Richland and Brownlee Zone.

Seismic Risk: What hazard does this present to dam integrity, and risk for inundation downstream with dam failure? What are the consequences of earthquake damage to dam structures? Can river recreational ORV be maintained? Can recreation use (motorized and nonmotorized boating, camp hunting, fishing, sight-seeing, backpacking, and horsepacking) be safely experienced? Are there opportunities to enhance safety of down river recreational users? Are particular sites especially at risk for immediate or catastrophic inundation if earthquakes damage dams?

E. Existing Data

Black and white aerial photos from 1950s (Enterprise Office) Grams study 1991 (1955 to 1982 sediment) Have requested studies done by other researchers on this issue (Dave Rubin, USGS Menlo Park) Jack Schmidt-Utah State University Ned Andrews - USGS Boulder, CO According to Dave Ruvin at Grand Canyon this caused loss of camping areas and inconvenience but no loss of bar formation GIS layer of campsites (needs verification) RMU Scenery themes from DEIS CMP Map of Oregon Seismicity, 1841-1986, R.Jacobson (State of Oregon Department of Geology) Geologic maps of the Grangeville, Elk City, Baker and Challis Quads *USGS 1967, etc.

Geologic map of the Brownlee Dam and Cuddy Mountain 7.5 min Quads, Gary Mann, 1988, Open File Report 88
65
USGS Earthquake data, Nov. 1997
Geologic hazards in Hells Canyon Region, Open file report 94-213
T. Vallier, USGS, 1994
Emergency Action Plan for Brownlee Dams and Power Plant Hells Canyon Hydroelectric Project #1971, IPC, July
1987
Seismicity Report, Zollweet and Woods, 1994 to IPC (Idaho Power Company)

F. Data Gaps/Study Needs

Flow modeling
Update carrying capacity and use to 1998
Final USGS Maps for Brownlee Dam and Cuddy Mountain
Final Geologic Hazards Report, USGS Hells Canyon Region
USGS maps for quads, north of Brownlee Dam (dams downstream and Snake River)
Local permanent seismic network in Brownlee Dam vicinity
Site conditions inventories and sampling
Recreation user surveys as well as comparing our situation with studies from other areas
Assessment of risk to Forest users downstream of dams from seismic activity

G. Study Methodology/Modeling Application

USGS detailed geologic maps (7.5 min quads) Installation of permanent seismic network near Brownlee and monitoring. Up-to-date assessment of all existing data. Assessment of seismic risk by recognized authority, such as USGS.

Description of Modeling Application

Compare dam construction period to current period to determine extent of loss of beaches. Seismic network monitoring by qualified geophysicists. Detailed geologic mapping by qualified geologists. Seismic risk assessment and geologic hazard assessment by qualified engineers, geophysicists, and geologists. Synthesize results to make recommendations for safe recreation use of down river corridor.

H. Proposed IPC Studies

Recreation Study 8.6.6

1. Integration with Other Forest Service Issues

Sediment Transport
Recreation use along Snake River Corridor

J. Issue Resolution Tracking (Chronological record *of* decisions and actions that lead to resolution *of* issues and/or data gapstudy needs)

K. Forest Plan Consistency Determination (Record *of* consistency *of* IPC proposals with FS management direction upon completion *of* data collection and analysis *of* proposed action)

L. Potential Protection, Mitigation, and Enhancement Measures (Potential PMEmeasures that may lead to terms and conditions *of* a new license)

Improved monitoring of seismicity. Possible amendment to emergency action plan. Early warning system and evacuation plan for down river users.

M. Notes/Comments

Prepared by Linda McFaddan, Linda Brandvold, and Gay Ernst Edited by Myrna L. Evans 8/28/98, 9/1/98, 10/15/98

Document #16

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 5, 1998

INFORMATION NEEDS ANALYSIS

Recreation Use (Amount and Type)

A. Issue Statement (Issue #3)

Conflicts exist involving the amount and type of recreation use, and private vs. public access at dispersed water and land based sites

The increased access to the river due to road to the dam, and the river attractions have increased recreational use and created a need to manage the use through the construction of a developed site. Operation and maintenance at the site continue to grow.

There is a need to maintain the established access to the site on the Idaho Power road because of the created recreation opportunities.

Increased use to the Hells Canyon Creek Visitor Center may exceed the carrying capacity of the site and is causing safety concerns for travellers on the road.

Access to the dam has induced and expanded the recreation opportunities on the river, (primarily powerboating and floating), and increased the potential for user conflicts and impacts to the physical/social environment

B. Geographic Scope of Concern

C. Forest Plan Management Direction

W-W FP Goals, page 4-10 Transportation
W-W FP S&Gs, page 4-34, Access
Same as Issue #1

D. Information Needed to Analyze the Issue/Question

Use data from previous years (Clarkston and Baker City)

E. Existing Data
F. Data Gaps/Study Needs
G. Study Methodology/Modeling Application
H. Proposed IPC Studies

Recreation Study 8.6.3

I. Integration with Other Forest Service Issues

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Improved monitoring of seismicity. Possible amendment to emergency action plan. Early warning system and evacuation plan for down river users.

M. Notes/Comments

Prepared by Linda McFaddan, Linda Brandvold, and Gay Ernst
Edited by Myrna L. Evans 8/28/98, 9/1/98, 10/15/98

Document #17

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 5, 1998

INFORMATION NEEDS ANALYSIS

Recreation Use (Developed Site Capacity)

A. Issue Statement (Issue #4)

Present major developed recreation sites and facilities may need expansion or enhancement.

Recreation use in the Hells Canyon River corridor has increased and is causing social and physical impacts at various Payette NF recreation sites and facilities (developed campgrounds, dispersed camping sites, boat ramps, trail heads, trails, caves, interpretive sites, rock outcrops, etc.)

Recreation use in the Hells Canyon River corridor has increased and is causing impact to the cost of operations and maintenance performed on various Payette NF lands and at various recreation sites and facilities (developed campgrounds, dispersed camping sites, boat ramps, trail heads, trails, caves, interpretive sites, rock outcrops, etc.) on the Payette NF.

Because of increased recreation use in the Hells Canyon River corridor there are access conflicts and potential access conflicts between recreation users and property owners.

Continued public use of the road from Oxbow to the HCNRA visitor center needs to be better defined for the new license.

What is the area of impact related to recreation associated with IPC's reservoirs and activities in the project area (rim to rim from Brownlee Reservoir slackwater north to Cache Creek where it enters the Salmon River)?

The support activities and facilities necessary to accommodate the increased recreation use, in the corridor may affect the scenic quality of the facilities and landscaped in the project area.

Dispersed use at Big Bar has increased and is causing impacts to the site.

Dispersed campers and day users in the Big Bar area are accessing caves and rock cliffs for recreational activities and causing disturbance to bats, wildlife, and defacing the sites, and using trails in the area.

What is the extent of dispersed use at the Hells Canyon Complex reservoirs and what are the effects? Reservoir users are camping at Brownlee Campground and .....

Increased use in the reservoir area may require a visitor facility to accommodate information needs and visitor facilities.

Future use may exceed carrying capacities of sites and dispersed use and displace users to upland areas of the Payette NF and the HCNRA.

The existing developed sites along the Hell Canyon Complex reservoirs may have brought additional recreation use to the area which may exceed the carrying capacity and physical environment of the current facilities.

Traffic is increasing from Forest Lands and roads to the Hells Canyon Complex reservoirs. This traffic may exceed the safe carrying capacity of existing roads and standards to which they are maintained.

B. Geographic Scope of Concern

Payette NF lands with the HCRC
Local communities, adjacent counties, regional BEA area

Interior Columbia Basin Ecosystem Management Project analysis area
Enterprise- Riggins-McCall-Huntington-Baker City

C. Forest Plan Management Direction

Payette NF Land and Resources Management Plan (PFP) pages IV 9-24, 137, 138; PFP Appendix A (Activity
Schedule, Management Area 1); Forest Service Manual (FSM) 2300; PFP AMS page 2-29, Supply/Demand; PFP
Issues, page 3-3, Local Economy; PFP Outputs, page 4-8, Local Economy; PFP S&Gs, page 4-31, Special Uses
O/Gs; PFP Monitoring, pages 5-12 and 5-13, Communities
ROS Users' Guide (1982)
ROS Book (1986)

Old VQO (VMS) materials:
National Forest Landscape Management, Volume 1, Agr. Handbook #434.
National Forest Landscape Management, Volume 2, Agr. Handbook #434.
Chapter 1, The Visual Management System, Agr. Handbook #462
Chapter 2, Utilities, Agr. Handbook #478
Chapter 3, Range, Agr. Handbook #484
Chapter 4, Roads, Agr. Handbook #483
Chapter 5, Timber, Agr. Handbook #559
Chapter 6, Fire, Agr. Handbook #608
Chapter 8, Recreation, Agr. Handbook #666
New Scenic Management System (SMS) Landscape Aesthetics, A Handbook for Scenery Management, Agr. Handbook #701
Existing FERC license.

Wallowa-Whitman Forest Plan (FP) Goal page 4-34 Transportation System: "To provide safe, efficient, environmentally sound access for the movement of people and materials involved in the use and management of the National Forest lands. FP S&G page 4-24, item 7, Protecting Water Quality, "Protect water quality in all aspects of road and trail system management. FP S&G page 4-24, item 8, Safety. "Conform with Forest Service manuals, and handbooks regarding adequacy and safety of the transportation system. FP S&G page 4-24, item 10. Access Management. "If a road is not at an adequate and safe standard for the traffic expected to use it, reconstruct the road or restrict traffic to a level for which the existing road is adequate.

Snake River Plan outstandingly remarkable values, page II-11, Recreation: Access by motor vehicle to major portalsmaintain/enhance; CMP page I-8 and table C-2: Access and Facilities: Manage roads to meet desired recreation opportunities spectrum.

D. Information Needed to Analyze the Issue/Question

What is the level of traffic over forest system roads and across forest lands which access the reservoirs? (traffic counts) Visitor Profiles: who, what, when, where and how long they stay?
How much use from reservoirs is dispersed back onto the Forests?
Where and what kinds of present recreation sites and facilities are in the Hells Canyon corridor?
What are the physical conditions of the present recreation sites and facilities in the Hells Canyon corridor?
What are the social conditions (crowded, over-used, acceptable, under-used) of present recreation sites and facilities in the Hells Canyon corridor?
Where will future recreation users disperse to achieve a recreation experience?
Where are the sites for potential recreation sites and facilities in the corridor?

How much and what types of historic recreation use occurred in the HCRC (reservoirs and uplands)?
How much and what types of recreation use is occurring in the HCRC (reservoirs and uplands)?
How much of that recreation use is on Payette NF lands, or at Payette NF sites and facilities?
What portion of the recreation use on the Payette NF is induced because of the reservoirs and/or because of IPC's facilities and activities?
What kinds of recreation facilities need to be planned to meet present and future recreation use projections related to Payette NF system lands and/or recreation sites and facilities?
What development levels(s) and/or design elements (PME) do present and future recreation users want at existing and future recreation facilities on Payette NF system lands (including capacities)?
What is the trigger point to implement site and/or facility enhancement, reconstruction, and/or new construction?
What share of site and/or facility enhancement, reconstruction, or construction should IPC be responsible for at present or in the future?
What specific recreation use at the Brownlee Campground is induced by IPC's reservoirs and activities?
What share of the Payette NF's administration, operations, and maintenance cost in the HCRC should the IPC be responsible for at present and in the future?
Identify and map (GIS) recreation opportunity spectrum setting designations with the HCRC?
What PMEs will be developed in relation to recreation operations and maintenance?
What is the ownership pattern of properties?
Where are the access point related to recreation?
Where are the existing access conflicts between recreation users and property, if any?
Where are potential access conflict points (between recreation users and property owners)?
How can access problems be solved?
Identify and map (GIS) the recreation area of impact related to [PC's reservoirs and activities.
Identify and map (GIS) VQO designations within the HCRC?
What PMEs will be developed to meet the area's VQOs?
Current supply of PAOTs, dispersed area carrying capacity, and river capacity limits vs. use
visitor profiles (who, what, when, where, how long, how much they spend and where).
Recreation use (RVDs) and visits.
Expenditure data for river (commercial and private) users.
Is the standard of access roads sufficient to safely accommodate traffic volume and mix of vehicles?
Is the maintenance of access roads adequate for safe passage of traffic?

E. Existing Data

Payette NF general area recreation use ongoing annually since 1987 (Payette NF SO, Jim Arp).
Specific recreation use at Big Bar and Brownlee sites since 1997 (Weiser RD, Mike Stayton).
Sites and facilities are mapped (Payette NF SO, GIS Shop).
ROS settings are mapped (SO GIS Shop).
Handbooks are available (SO - Jim Arp).
Ownership related to the Payette NF is available (SO Lands Shop).
Access points related to the Payette NF are available (SO - Jim Arp).
Payette NF VQOs are mapped (SO - GIS Shop)
Traffic counts on the Wallowa Mountain Loop Road 39 from 1978 to 1994 (Linda Brandvold)
Traffic counts on Oregon State Highway 86 on Copperfield Bridge (Linda Brandvold)

F. Data Gaps/Study Needs

Need pre-1986 recreation use data.
Need percent of induced recreation use. Lacking recent condition surveys (physical and social).
Lacking recreation use trends at Big Bar and Brownlee sites.

Lacking projected recreation use.
Conversion to new Scenery Management System (SMS).
Existing traffic counters at North Wallowa Loop Road, South Wallowa Loop Road, Lonesome Saddle, Hells Canyon Launch and Highway 86.
Copperfield needs to be monitored.
Need traffic counters installed at Hess Road, Kleinschmidt Grade, Brownlee Campground, and South IPC road.

Past and present recreation use numbers? Percent of Payette NF recreation induced because of IPC's facilities and activities? Potential recreation use sites and facilities? PMEs to enhance present recreation sites and facilities? PMEs to construct new recreation sites and facilities? Trigger point for change? GIS map.

Monitoring of traffic surveillance sites to give accurate statistical counts for average daily traffic during season of use of roads. Determine if road standards are adequate to safely handle traffic volume and types. Improve standard of roads or maintenance to provide for safe public travel.

G. Study Methodology/Modeling Application

Monitor traffic loops to give accurate average daily traffic. Compare traffic volumes and trends in traffic use to standards of roads. Determine if road standards are adequate to safely handle traffic volume and types. Improve. Improve standard of roads or maintenance to provide for safe public travel.

Description of modeling application

Graph statistically accurate representation of traffic counts to reflect existing road use. Determine if road standards are adequate for use (Forest Service Transportation System Manuals)

H. Proposed IPC Studies

None proposed

I. Integration with Other Forest Service Issues

Linked with other recreation and other resources (cultural, watershed, wildlife, fish, vegetation, weeds, etc.) managed in the HCRC. Public safety, recreation opportunities, operations and maintenance, etc.
Scenic and visual quality, facility and structure development, scenic byway designation.
Displaced use, exceeding carrying capacity of facilities, visual qualify, habitat loss-terrestrial

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Improved monitoring of seismicity. Possible amendment to emergency action plan. Early warning system and evacuation plan for down river users.
Licensee pay percentage of induced recreation use for enhancement, reconstruction, new construction, administration, operations, and maintenance.
PMEs to be developed.
Develop a visitor center and/or rest area to distribute information and interpretive materials to the public.
Bury transmission lines.
Improve standards of road or maintenance to provide for safe public travel.

M. Notes/Comments

Prepared by Linda McFaddan, Linda Brandvold, and Gay Ernst Edited by Myrna L. Evans 8/28/98, 9/1/98, 10/15/98

Document #18

HELLS CANYON COMPLEX RELICENSING
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

Terrestrial Resources

A. Issue Statement

Determining the effects of original impoundments (construction) on the wildlife and botanical resources. The effects of changing from a free flowing riverine habitat to large, slack water impoundments. How much habitat was lost and what were the effects on these resources. This would provide the historic condition with which existing condition could be compared against to determine losses or gains in specific habitat and to specific species.

B. Geographic Scope of Concern

Wild and Scenic Snake River corridor and reservoirs.

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7.

Payette - FP Goal page IV-25, Wildlife - Provide a variety and diversity of habitat throughout the Forest to support viable populations of all native vertebrate. Payette - FP Goal page IV-25, Wildlife - Provide necessary habitat and population for rare plant species. Payette - FP Objectives page IV-25, Wildlife - Provide elk habitat capable of sustaining current elk populations in the non-anadromous drainages. Provide elk habitat capable of sustaining or increasing elk populations in the other areas of the Forest. Manage pileated woodpecker, vesper sparrow, and Williamson's sapsucker habitat in conjunction with elk habitat effectiveness to achieve the goals for management indicator species. Manage threatened and endangered species habitat consistent with recovery plan objectives. Improve habitat through specific wildlife improvement projects as outlined in the activity schedule. Determine distribution of threatened, endangered and sensitive plant species. Establish management direction for threatened, endangered and sensitive plant populations. Payette - FP Goal page IV-91, Riparian-Manage riparian areas to maintain or improve riparian-dependent resources. Payette - FP Objectives page IV-91, Riparian - Maintain natural complexity and high relative productivity of riparian soils. Maintain capability of riparian soils and vegetation to act as an effective buffering zone for sediment and other potential water pollutants from upslope activities. Maintain and/or provide structural integrity of riparian areas to moderate flooding and minimize erosion. Assure that land-disturbing activities in adjacent areas are conducted and mitigation is applied, in a manner which minimizes the quantities of eroded material delivered to riparian areas. Maintain streambanks, streamside vegetation vegetation, especially, streambank trees, embedded organic material, and large rock in a stable condition to provide habitat for fish. Provide for recruitment of large woody debris to maintain stream stability and fish habitat. Maintain fish passage by removing or not creating activity-related blockages and other significant obstructions from perennial streams and major intermittent tributaries. Maintain nutrient cycles and fish food relationships. Maintain or enhance the hiding and thermal cover qualities of forested riparian areas, emphasizing the preservation of riparian hiding cover adjacent to mineral licks , wallows, and calving or fawning areas, and the

preservation of hiding and thermal cover along riparian travelways. Maintain or enhance the nesting and rearing habitats within riparian areas for all species of birds, giving priority to the preservation of old growth in riparian areas for cavity-dependent species. Maintain riparian successional stages, giving priority to the natural pattern of fire and disease-dependent stages. Construct and manage structures and improvements in, and adjacent to, streamcourses in manner whereby the risk of sedimentation from channel erosion or structure failure is commensurate with water quality standards and downstream values. Avoid long and short-term adverse impacts which may be associated with the occupancy and modification of floodplains and with the loss or modification of wetlands and other types of riparian.

Desired Future Condition

Riparian areas of the future on the Payette National Forest will exhibit an improving trend where recovery of degraded conditions is possible and will be protected where they are now in good condition. Management decisions will be made in favor of riparian dependent resources where conflicts exist with man's use.

Improvement will be achieved by restoration of roads where they are no longer needed to meet resource management objectives, by altering grazing systems for domestic livestock, by minimizing disturbance associated with mining and other land disturbing activities and by reintroducing fire effects to ecosystems with short natural fire frequencies.

Protection of riparian areas will be provided by prohibiting scheduled timber sales in major riparian areas, prohibiting road construction parallel to streams, restricting hydropower development and other water withdrawals, limiting conflicting recreational uses, and recommending Wilderness and wild and scenic rivers (emphasis highlighted).

Payette - FP Goal page IV-104, Lands-Respond to notices of Federal Energy Regulatory Commission Exemption, License, and Preliminary Permit Application for hydroelectric proposals. Payette - FP Objectives page IV-104, Lands - Emphasize environmental protection, mitigation of impacts, conformance with land use designations, and returns to Treasury. Ensure continued compliance throughout planning, construction, operation, relicensing, and reclamation phases of project life.

W-W FP Goals page 4-1, Soil and Water - To maintain and enhance soil productivity, water quality and water quantity and to meet or exceed State Water quality standards, and to acquire water rights for water uses under State Law. W-W FP Goals page 4-2, Wildlife - To provide near-optimum hiding cover, thermal cover and forage conditions on big game winter ranges and selected summer ranges. W-W FP Goals page 4-2, Wildlife - To provide habitat for viable populations of all existing native and desired nonnative vertebrate wildlife species and to maintain or enhance the overall quality of wildlife habitat across the Forest. W-W FP Management Objectives page 4-12, Wildlife - Most big game winter ranges are managed to provide high quality cover and forage conditions. Some summer ranges, because of their importance to elk are also managed to provide high quality habitat. The remaining summer ranges are managed emphasizing production of commodities, although a level of elk (big game) habitat protection is provided through application of Regional harvest dispersion constraints.

W-W FP Regional Forester's Amendment #2 (AKA "Screens")

PACFISH Environmental Analysis and Decision Notice

INFISH Environmental Analysis and Decision Notice
Wild and Scenic Snake River Recreation Management Plan-The number and diversity of wildlife species that inhabit the Wild and Scenic corridor of the Snake River establishes its importance as

wildlife habitat. The area incorporates significant migration, wintering and year-round habitat for numerous wildlife species and provides opportunities for human interactions with these creatures. Wildlife and wildlife habitat are outstanding remarkable values of the Snake River Wild and Scenic corridor.

The Snake River canyon contains populations of MacFarlane's four-o'clock, a federally listed species by the U.S. Fish and Wildlife Service. In addition, four species which are candidates for listing also occur in the canyon. Ten species are considered Forest Service sensitive and a total of 19 are either rare or endemic to the canyon. Few locations in the Pacific Northwest, or western North America, equal the Snake River canyon in the concentration and number of rare plant or endemic species. The vegetation/botanical resource of the Wild and Scenic Snake River is an outstandingly remarkable value.

Pacific Bald Eagle Recovery Plan-Published by the US Fish and Wildlife Service, signed August 25, 1986.

Pacific Coast Recovery Plan for the American Peregrine Falcon-Published by the US Fish and Wildlife Service, signed October 12, 1982.

American Peregrine Falcon Nest Site Management Plan-Published by the USDA Forest Service, Wallowa-Whitman National Forest and the USDI Fish and Wildlife Service, 1998.

Mirablis macfarlanei, MacFarlane's Four-O'clock Recovery Plan-Published by the US Fish and Wildlife Service, signed March 27, 1985.

D. Information Needed to Analyze the Issue/Question

Identify the landscape features and important habitats that are now absent from the ecosystem.
What is the loss of low elevation big game winter range (mule deer, elk, bighorn sheep, mountain goats)? In acres flooded.
What is the loss of low elevation cliff habitat (peregrine falcon nesting habitat, bighorn sheep lambing areas)? In acres of each, nesting habitat and lambing habitat.
What is the loss of caves and mines and the associated species (bats)?
How much and what types of riparian habitats and wetlands have been lost because of flooding of the reservoirs? For example, has there been a loss of large stable, low elevation, complex riparian habitats (where there any large cottonwood galleries, mature/old willow habitat, mature/old white alder habitat, other stable riparian complexes)?
What PETS plant populations or habitat has been lost?
What PETS wildlife populations and/or habitat has been lost?
What has been the loss of native upland shrub lands and perennial bunch grasslands?
What is the effects to the terrestrial resources due to the changes in water quality and temperatures?
What changes has occurred to wintering species (bald eagles, waterfowl, etc.)?
Identify degraded habitats that can and need to be restored.

Habitat fragmentation caused by construction and operation of the project. There is the potential to cause habitat fragmentation for some species, some of which are of specific concern to land managers.

Has there been a loss of connectivity for species such as wolverines, lynx, etc. due to the size of the reservoirs (distance to cross) and increased late season flows below Hells Canyon dam (higher late season flows and little to no freezing of the river because of these flows)?

With the linear loss of habitat, has this created an impediment to movement (migration routes altered) of some species (mammalian carnivores, furbearers, big game, small mammals, amphibians, etc.)?
Are there impediments to movement (travel and genetic exchange) due to the freezing (icing) and thawing of the reservoirs?
What effects do the structures associated with the project have on species movement independent of water fluctuations?

Loss of anadromous fish link in the wildlife food chain. It is assumed that many species utilized this incredible annual increase in protein.

What are the effects of the reduction or elimination of this large nutrient base?
Are there changes in the populations of some species or has there been a change in food habitats to other sources?

E. Existing Data

Hells Canyon Bighorn Sheep Initiative - herd history, die-offs, current population status and dynamics, harvest, habitat availability, habitat limitations, habitat improvements, release sites, disease testing, source populations, monitoring and research, habitat evaluations, habitat management, future improvements, publications and reports and budgets.

Data is located at Idaho Fish and Game, Lewiston Office, Oregon Department of Fish and Wildlife, Enterprise Office, USDA Forest Service, Enterprise and Baker City Offices.

F. Data Gaps/Study Needs

There is a need to review specific IPC study plans to evaluate if issues are being addressed.
Pre-project photo interpretation
Potential connectivity issues with any studies.
Reduced nutrient base and its affects.
Describe the changes (loses or gains) in habitat, effects on special emphasis species, endangered and threatened species, and sensitive species.

G. Study Methodology/Modeling Application

Descriptive changes, Habitat Effectiveness Index (HEI), Historic Range of Variability (HRV), habitat acres effected (lost or gained).

H. Proposed IPC Studies

8.2.1 A Description of the Small Mammal Community in Hells Canyon
8.2.2 A Description of the Nongame Bird Community in Hells Canyon
8.2.3 A Description of the Raptor Community Nesting in Hells Canyon
8.2.4 A Description of the Amphibian and Reptile Community in Hells Canyon
8.2.5 A Description of the Bat Community in Hells Canyon
8.2.9 Mule Deer Population Survey in Hells Canyon
8.2.10 Distribution and Abundance of Mountain Goats in Hells Canyon
8.2.11 Literature and Status Review of Big Game Species in Hells Canyon
8.2.12 Spring Distribution, Habitat Use and Relative Abundance of Upland Game Birds in Hells Canyon
8.2.14 Summer Survey of Waterfowl Broods in Hells Canyon
8.2.15 Use of Hells Canyon by Wintering Waterfowl

8.2.18 Nongame Wildlife Habitat Measurements
8.2.19 Review of Wildlife Information and Data Collected in Hells Canyon by the Oregon Department of Fish and Wildlife
8.2.23 Effects of Water Level Fluctuations on Wildlife Habitat
8.2.27 Effects of Water Level Fluctuations on Amphibians and Reptiles (in 8.2.23)
8.2.28 Effects of Reservoir Icing on Big Game Populations
8.3.1 Vegetation Description of Hells Canyon - Weiser, Idaho to the Salmon River
8.3.5 Effects of Water Level Fluctuations on Botanical Resources
Effects of Constructing and Operating the Hells Canyon Complex on Wildlife Habitat (draft study proposal, June 1998)

I. Integration with Other Forest Service Issues

Aquatics

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Land purchases to replace lost habitats.
Land easements to replace lost habitats.
Habitat improvements to mitigate for lost or damaged habitats.
Species reintroductions/supplementations to mitigate for lost or damaged habitats.
Change in complex operations to improve and/or mitigate for lost or damaged habitats and species.

M. Comments/Notes

Updated August 20, 1998 Kevin Martin
Edited by Myrna L. Evans 8/27/98, 9/22/98, 10/15/98

HELLS CANYON COMPLEX RELICENSING
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

A. Issue Statement (Riparian Habitats)

Lack or loss of quality riparian habitats. Riparian habitats are very important to many species and are a major concern for all land managers. Construction of the dams and the flooding of riparian and bottom land habitats reduced or eliminated high quality river riparian habitat. In addition flow fluctuations associated with both the impoundments draw downs and dam operation has further reduced the potential for the area to replace some of the lost riparian habitat.

B. Geographic Scope of Concern

All existing and historic riparian habitats, including but not limited to those associated with the Snake River corridor and all connected tributary areas that have been changed by the construction, operation and maintenance of the projects.

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7.

Payette - FP Goal page IV-25, Wildlife - Provide a variety and diversity of habitat throughout the Forest to support viable populations of all native vertebrate.

Payette - FP Goal page IV-25, Wildlife - Provide necessary habitat and population for rare plant species. Payette - FP Goal page IV-91, Riparian-Manage riparian areas to maintain or improve riparian-dependent resources. Payette - FP Objectives page IV-91, Riparian - Maintain natural complexity and high relative productivity of riparian soils. Maintain capability of riparian soils and vegetation to act as an effective buffering zone for sediment and other potential water pollutants from upslope activities. Maintain and/or provide structural integrity of riparian areas to moderate flooding and minimize erosion. Assure that land-disturbing activities in adjacent areas are conducted and mitigation is applied, in a manner which minimizes the quantities of eroded material delivered to riparian areas. Maintain stream banks, streamside vegetation, especially, stream bank trees, embedded organic material, and large rock in a stable condition to provide habitat for fish. Provide for recruitment of large woody debris to maintain stream stability and fish habitat. Maintain fish passage by removing or not creating activity-related blockages and other significant obstructions from perennial streams and major intermittent tributaries. Maintain nutrient cycles and fish food relationships. Maintain or enhance the hiding and thermal cover qualities of forested riparian areas, emphasizing the preservation of riparian hiding cover adjacent to mineral licks , wallows, and calving or fawning areas, and the preservation of hiding and thermal cover along riparian travelways. Maintain or enhance the nesting and rearing habitats within riparian areas for all species of birds, giving priority to the preservation of old growth in riparian areas for cavity-dependent species. Maintain riparian successional stages, giving priority to the natural pattern of fire and disease-dependent stages. Construct and manage structures and improvements in, and adjacent to, streamcourses in manner whereby the risk of sedimentation from channel erosion or structure failure is commensurate with water quality

standards and downstream values. Avoid long and short-term adverse impacts which may be associated with the occupancy and modification of floodplains and with the loss or modification of wetlands and other types of riparian.

Desired Future Condition

- Riparian areas of the future on the Payette National Forest will exhibit an improving trend where recovery of degraded conditions is possible and will be protected where they are now in good condition. Management decisions will be made in favor of riparian dependent resources where conflicts exist with man's use.

-Improvement will be achieved by restoration of roads where they are no longer needed to meet resource management objectives, by altering grazing systems for domestic livestock, by minimizing disturbance associated with mining and other land disturbing activities and by reintroducing fire effects to ecosystems with short natural fire frequencies.

-Protection of riparian areas will be provided by prohibiting scheduled timber sales in major riparian areas, prohibiting road construction parallel to streams, restricting hydropower development and other water withdrawals, limiting conflicting recreational uses, and recommending Wilderness and Wild
and Scenic Rivers (emphasis highlighted).

Payette - FP Goal page IV-104, Lands-Respond to notices of Federal Energy Regulatory Commission Exemption, License, and Preliminary Permit Application for hydroelectric proposals. Payette - FP Objectives page IV-104, Lands - Emphasize environmental protection, mitigation of impacts, conformance with land use designations, and returns to Treasury. Ensure continued compliance throughout planning, construction, operation, relicensing, and reclamation phases of project life.

W-W FP Goals page 4-2, Wildlife - To maintain or enhance the unique and valuable characteristics or riparian areas and to maintain or improve water quality, wildlife habitat and fish habitat near or within riparian ecosystems. W-W FP Goals page 4-2, Wildlife - To provide habitat for viable populations of all existing native and desired nonnative vertebrate wildlife species and to maintain or enhance the overall quality of wildlife habitat across the Forest. W-W FP Management Objectives page 4-12, Wildlife - Riparian habitat will be maintained or enhanced through more stringent livestock management requirements to the benefit of wildlife and salmonid fishes.

Wild and Scenic Snake River Recreation Management Plan-The number and diversity of wildlife species that inhabit the Wild and Scenic corridor of the Snake River establishes its importance as wildlife habitat. The area incorporates significant migration, wintering and year-round habitat for numerous wildlife species and provides opportunities for human interactions with these creatures. Wildlife and wildlife habitat are outstanding remarkable values of the Snake River Wild and Scenic corridor.

The Snake River canyon contains populations of MacFarlane's four-o'clock, a federally-listed species by the U.S. Fish and Wildlife Service occurring on National Forest System lands. In addition, four species which are candidates for listing also occur in the canyon. Ten species are considered Forest Service sensitive and a total of 19 are either rare or endemic to the canyon. Few locations in the Pacific Northwest, or western North America, equal the Snake River canyon in the concentration and number of rare plant or endemic species. The vegetation/botanical resource of the Wild and Scenic Snake River is an outstandingly remarkable value.

W-W FP Regional Forester's Amendment #2 (AKA "Screens")

PACFISH Environmental Analysis and Decision Notice

INFISH Environmental Analysis and Decision Notice

W-W FP Goal page 4-22, Watershed - To maintain or enhance the unique and valuable characteristics of riparian areas and to maintain or improve water quality, streamflows, wildlife habitat, and fish habitat. Design and conduct all management activities in all streamside management units to maintain or improve water quality and associated beneficial uses in SMU Class 1 and 2 streams.

Pacific Bald Eagle Recovery Plan, US Fish and Wildlife Service, August 25, 1986.

Pacific Coast Recovery Plan for the American Peregrine Falcon, US Fish and Wildlife Service, October 12, 1982.

Mirablis macfarlanei, MacFarlane's Four-O'clock Recovery Plan, US Fish and Wildlife Service, March 27, 1985.

D. Information Needed to Analyze the Issue/Question

What population changes has occurred with the loss and fragmentation of these habitats? (mountain quail, amphibians, reptiles, Neotropical/land birds, etc.).
Was there a loss in the connectivity with the disruption in the historic continuous riverine riparian system and what species are affected?
What is the effect of the constant change in water levels throughout the year on the existing habitats (water fluctuations on riparian species and habitats)?
What is the loss of riparian habitat due to reservoir fluctuations?
What is the loss of riparian habitat due to river flow fluctuations?
What erosion is associated with the construction and operation of the project? How has this effected terrestrial resources?

E. Existing Data

8.2.23 Effects of Water Level Fluctuations on Wildlife Habitat
8.2.24 Effects of Water Level Fluctuations and Road and Transmission Line Corridors on Riparian Habitat Fragmentation
8.2.27 Effects of Water Level Fluctuations on Amphibians and Reptiles
8.3.5 Effects of Water Level Fluctuations on Botanical Resources

I. Integration with Other Forest Service Issues

Aquatics.

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Potential changes in the operation of the complex, for example flows and drawdowns.
Riparian habitat improvements
Land purchases and/or easements

M. Comments/Notes

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Updated August 20, 1998 Kevin Martin
Edited by Myrna L. Evans 8/27/98, 9/22/98, 10/15/98
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Document #18, continued

HELLS CANYON COMPLEX RELICENSING
Wallowa-Whitman and Paytional Forests

Nov

INFORMATION NEEDS ASSESSMENT

A. Issue Statement (Transmission Lines)

Effects of transmies and associ access roads on willicies and habitat.

B. Geographic Scope of Concern

IPC transmission lines across National Forest System lands.

C. Forest Service Management Direction

Hellnyon National Recreation Area Act, section 7.

Paye 0e - FP Goal page IV-25, Willife - Provi de a variety and diversity of habitat throughout the Forest to support viable populations of all native vertebrate. Paye 0e - FP Goal page IV-25, Wildlife - Provide necessary habitat and population for rare plannm 0 specit0e - FP Goal page IV-91, Riparian-Manage riparian arnm .8(ea)5.8(s to Assure th)-0.2(e st)5.8(rvi)-8(o)9.5(e ripa)5.8(rian)5 adjacent arnm .8(ea)5.8(s are co)5.8(ndu)5.8(ct)8.9(e d Avoiding)5.8(a)5.8(t)2.9(nd sppli)7.1(e)-0.2(d)5.8(,)2.9(in a impacts which may be associate with the occupancy and modification of floodplains and with the loss or modification of wetlands and other types of riparian.

W-W FP Goals pagovide h tat for viable population of ae and desionnative vertebrate wildlife species and to maintain or enhance the overall quality of wildlife habitat across the Forest. W-W FP Management Objectives pag12, Old Growth (Screens). W-W FP Management Objectives page 4-12, Willife - snags (Screens)

W-W FP Regi rester's Amendment #2 (AKA "Screens")

PACFISH Environmennm 0 al Analysi and DeciNotice

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Pacific Bald Eagle Recovery Plan, US Fish and Wildlife Service, August 25, 1986.

Pacific Coascovery Plan for the American Pe regrion, US Fish and Wildlife Service, October 12, 1982.

Mirablis maarlaarla-O'clock Recovery Plan, US Fish and Willife Service, March 27, 19

D. Information Needed to Analyze the Issue/Question

1. Has the construction and maintenance of the transmission lines and associated roads created travel corridors for edge associated species?
2. Has the construction and maintenance of the transmission lines and associated roads caused the loss of habitat connectivity and degradation for old and mature forest associated species, solitude associated species, such as wolverines, marten, lynx, etc.?
3. What are the direct effects of the transmission lines, such as electrocutions and collisions by raptors and other migratory and/or resident bird species? Many of these species are PETS species and land managers are going to great length to preserve and protect them.

E. Existing Data

F. Data Gaps/Study Needs

There is a need to review specific IPC study plans to evaluate if issues are being addressed. Fragmentation issues may not be addressed.
Describe the changes (losses or gains) in habitat, effects on special emphasis species, endangered and threatened species, and sensitive species.

G. Study Methodology/Modeling Application

Descriptive changes, Habitat Effectiveness Index (HEI).

H. Proposed IPC Studies

8.2.24 Effects of Water Level Fluctuations and Road and Transmission Line Corridors on Riparian Habitat Fragmentation
8.2.29 Effects of Road and Transmission Line Corridors on Wildlife Habitat
8.2.30 Effects of Roads and Transmission Line Corridors on Wildlife Habitat of Threatened and Endangered Species and Species of Special Concern
8.2.34 An Evaluation of Raptor Electrocution of Transmission Lines Associated with the Hells canyon Project
8.2.35 An Evaluation of Avian Collision with Transmission Lines Associated with the Hells Canyon Project
8.3.4 Effects of Roads and Transmission Line Rights of Ways on Noxious Weeds
8.3.6 Effects of Road and Transmission Line Right of Ways on Botanical Resources

I. Integration with Other Forest Service Issues

Aquatics

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Habitat improvements to mitigate for lost or damaged habitats.
Species reintroductions/supplementations to mitigate for lost or damaged habitats.
Change in operations to improve and/or mitigate for lost or damaged habitats and species.

M. Comments/Notes

Updated August 20, 1998 Kevin Martin
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Document #18, continued

HELLS CANYON COMPLEX RELICENSING
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

A. Issue Statement (Transmission Lines)

There may be loss of large woody material (LWM) below the transmission lines in intermittent and perennial streams. There may be erosion from the transmission line access roads, specifically on the plateaus above the river. There may be thermal pollution of tributaries caused by transmission line vegetation removal.

B. Geographic Scope of Concern

IPC transmission lines across National Forest System lands.

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7.

PACFISH/INFISH

Payette - FP Goal page IV-25, Wildlife - Provide a variety and diversity of habitat throughout the Forest to support viable populations of all native vertebrate.

Payette - FP Goal page IV-25, Wildlife - Provide necessary habitat and population for rare plant species. Payette - FP Goal page IV-91, Riparian-Manage riparian areas to maintain or improve riparian-dependent resources. Payette - FP Objectives page IV-91, Riparian - Maintain capability of riparian soils and vegetation to act as an effective buffering zone for sediment and other potential water pollutants from upslope activities. Maintain and/or provide structural integrity of riparian areas to moderate flooding and minimize erosion. Assure that land-disturbing activities in adjacent areas are conducted and mitigation is applied, in a manner which minimizes the quantities of eroded material delivered to riparian areas. Provide for recruitment of large woody debris to maintain stream stability and fish habitat. Maintain or enhance the nesting and rearing habitats within riparian areas for all species of birds, giving priority to the preservation of old growth in riparian areas for cavity-dependent species. Construct and manage structures and improvements in, and adjacent to, stream courses in manner whereby the risk of sedimentation from channel erosion or structure failure is commensurate with water quality standards and downstream values. Avoid long and short-term adverse impacts which may be associated with the occupancy and modification of floodplains and with the loss or modification of wetlands and other types of riparian.

WWNF Forest Plan, Watershed S&G 4-24 #19, 20

Pacific Bald Eagle Recovery Plan, US Fish and Wildlife Service, August 25, 1986.

Pacific Coast Recovery Plan for the American Peregrine Falcon, US Fish and Wildlife Service, October 12, 1982.

Mirablis macfarlanei, MacFarlane's Four-O'clock Recovery Plan, US Fish and Wildlife Service, March 27, 1985.

D. Information Needed to Analyze the Issue/Question

Extent and effects of loss of LWM due to the transmission lines?

Possibility to reintroduce LWM under the transmission lines. Conduct an inventory of in-stream LWM for 0.25 miles above and below the transmission corridor. Determine the role of large wood within these channel segments. If inventoried levels of large wood is less than RMOs, determine mitigation needs.

Extent and effects of erosion from access roads. Conduct an inventory of the condition of the transmission access roads on the forest. Determine rehabilitation needs for road sections with drainage or erosion concerns.
Is the removal of vegetation below transmission lines causing temperatures to be altered?

E. Existing Data

Imnaha River Stream Survey Report-February 1992. (Wallowa-Whitman National Forest Office)

F. Data Gaps/Study Needs

Study needs to be developed and completed
Describe the changes (losses or gains) in habitat, effects on special emphasis species, endangered and threatened species, and sensitive species.

G. Study Methodology/Modeling Application

Inventory road locations and highlight where roads are within 300 feet of perennial fish-bearing waters, 150 feet of perennial non-fish-bearing waters, and 100 feet of intermittent streams, wetlands, seeps, springs.
Inventory condition of road with respect to erosion and potential maintenance/mitigation needs.
Inventory LWM 0.25 miles above and below transmission lines using Region 6 stream survey protocols and properly functioning condition (PFC) method. Determine if addition of LWM is needed.

H. Proposed IPC Studies

None

I. Integration with Other Forest Service Issues

Aquatic

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Maintenance of access roads
Closure and obliteration of roads not needed for transmission line access
Placement of LWM under transmission lines

M. Comments/Notes

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Updated August 20, 1998 Kevin Martin
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Document #18, continued

HELLS CANYON COMPLEX RELICENSING
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

A. Issue Statement (Noxious Weeds)

The management of the project may be spreading the invasion of noxious weeds throughout the area. Roads and equipment associated with the project may be increasing this risk. Water fluctuations may be maintaining sites for noxious weed establishment.

B. Geographic Scope of Concern

The influence zone of the Hells Canyon Project.

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7.

Payette - FP Goal page IV-25, Wildlife - Provide a variety and diversity of habitat throughout the Forest to support viable populations of all native vertebrate. Payette - FP Goal page IV-25, Wildlife - Provide necessary habitat and population for rare plant species. Payette - FP Objectives page IV-25, Wildlife - Provide elk habitat capable of sustaining current elk populations in the non-anadromous drainages. Provide elk habitat capable of sustaining or increasing elk populations in the other areas of the Forest. Manage pileated woodpecker, vesper sparrow, and Williamson's sapsucker habitat in conjunction with elk habitat effectiveness to achieve the goals for management indicator species. Manage threatened and endangered species habitat consistent with recovery plan objectives. Improve habitat through specific wildlife improvement projects as outlined in the activity schedule. Establish management direction for Threatened, Endangered and Sensitive plant populations. Payette - FP Goal page IV-91, Riparian-Manage riparian areas to maintain or improve riparian-dependent resources. Payette - FP Objectives page IV-91, Riparian - Maintain natural complexity and high relative productivity of riparian soils. Maintain capability of riparian soils and vegetation to act as an effective buffering zone for sediment and other potential water pollutants from upslope activities. Maintain and/or provide structural integrity of riparian areas to moderate flooding and minimize erosion. Assure that land-disturbing activities in adjacent areas are conducted and mitigation is applied, in a manner which minimizes the quantities of eroded material delivered to riparian areas. Maintain streambanks, streamside vegetation vegetation, especially, streambank trees, embedded organic material, and large rock in a stable condition to provide habitat for fish. Maintain riparian successional stages, giving priority to the natural pattern of fire and disease-dependent stages. Avoid long and short-term adverse impacts which may be associated with the occupancy and modification of floodplains and with the loss or modification of wetlands and other types of riparian.

W-W FP Goals page 4-2, Wildlife - To provide habitat for viable populations of all existing native and desired nonnative vertebrate wildlife species and to maintain or enhance the overall quality of wildlife habitat across the Forest. W-W FP Goals page 4-51, Range - To manage range ecosystems to ensure that the basic needs of the forage and soil resources are met. To make

available forage production, above that needed for maintenance or improvement of the basic resource resources, to wildlife (within Management Objectives) and permitted domestic livestock under standards and guidelines that will assure continued maintenance or improvement of the resource.

W-W FP Regional Forester's Amendment #2 (AKA "Screens")

PACFISH Environmental Analysis and Decision Notice

INFISH Environmental Analysis and Decision Notice

Managing Competing and Unwanted Vegetation, Final Environmental Impact Statement-November 1988.

Integrated Noxious Weed Management Plan-Wallowa-Whitman National Forest Forest Plan Amendment, April 30, 1992.

Pacific Bald Eagle Recovery Plan, US Fish and Wildlife Service, August 25, 1986.

Pacific Coast Recovery Plan for the American Peregrine Falcon, US Fish and Wildlife Service, October 12, 1982.

Mirablis macfarlanei, MacFarlane's Four-O'clock Recovery Plan, US Fish and Wildlife Service, March 27, 1985.

D. Information Needed to Analyze the Issue/Question

Where are the noxious weed sites located within the project area boundaries, including associated roads and transmission lines?
What is the rate of spread or potential from the existing sites onto adjoining lands?
What are the vectors that are causing the spread of noxious weeds?

E. Existing Data

Terrestrial Team Agreement - Idaho Power should take care of the weeds on their property, the river corridor, power lines and road right of ways. They should participate on the tri-state weed effort, including continuation of surveys and monitoring of treated sites, including the Snake River corridor which will be a never ending source of new infestations. They should get with the other land owner/managers to determine what has been accomplished to assure we are all using our limited resources wisely and not duplicating efforts.

There are lots of existing surveys completed by the surrounding counties, agencies and landowners.

(US Forest Service, BLM, Oregon Department of Fish and Wildlife, Idaho Department of Fish and Game offices, and private landowners)

F. Data Gaps/Study Needs

What are the weed vectors? What is the rate of spread? What can be done to influence these factors (prevent additional spread, prevent new exotics from entering the area and control existing weeds)?

Techniques for native plant community restoration.

G. Study Methodology/Modeling Application

Identify sites and species.

H. Proposed IPC Studies

8.3.3 Effects of Water Level Fluctuations on Noxious Weeds
8.3.4 Effects of Road and Transmission Line Rights of Ways on Noxious Weeds

I. Integration with Other Forest Service Issues

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Treat noxious weed sites, both short and long term.
Survey for additional weed sites, both short and long term.
Develop a noxious weed management plan to deal with this never ending problem, may include changes in operations and maintenance of complex.
Participation by Idaho Power as a team member on the tri-State Weed control effort.

M. Comments/Notes

Updated August 20, 1998 Kevin Martin
Edited by Myrna L. Evans 8/27/98, 9/22/98, 10/15/98

Document #18, continued

HELLS CANYON COMPLEX RELICENSING
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

A. Issue Statement (Microhabitats)

The loss of or reduction in some microhabitats from dewatering and flooding.

Fluctuating flows appear to have contibuted to the following factors:
- Sand bars have ceased to be maintained and/or restored.
- Existing sand bars and even more stable alluvial fans have disappeared downstream.
- Wildlife of all phylla have been impacted by the alterations particularly the least mobile and those that are specialists for palustrine, sand bars and associated habitats.
- Lichen communities specialized for annual cyclic fluctuations between high flows and low flows, and splash zone specialists are much reduced in distribution, abundance and their contributions to higher trophic ecologies.
- Effects on vegetation, including riparian, on loss of existing sand bars and the forming of new.

B. Geographic Scope of Concern

The most heavily impacted zone of habitats for wildlife downstream of Hells Canyon Dam along the Snake River is the reach that appears as a "whitish smear" between the high water line and the low water line, presumably as a result of fluctuating flow control.

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7.

Payette - FP Goal page IV-25, Wildlife - Provide a variety and diversity of habitat throughout the Forest to support viable populations of all native vertebrate. Payette - FP Goal page IV-25, Wildlife - Provide necessary habitat and population for rare plant species. Payette - FP Goal page IV-91, Riparian-Manage riparian areas to maintain or improve riparian-dependent resources. Payette - FP Objectives page IV-91, Riparian - Maintain natural complexity and high relative productivity of riparian soils. Maintain capability of riparian soils and vegetation to act as an effective buffering zone for sediment and other potential water pollutants from upslope activities. Maintain and/or provide structural integrity of riparian areas to moderate flooding and minimize erosion. Maintain streambanks, streamside vegetation vegetation, especially, streambank trees, embedded organic material, and large rock in a stable condition to provide habitat for fish. Maintain riparian successional stages, giving priority to the natural pattern of fire and disease-dependent stages. Avoid long and short-term adverse impacts which may be associated with the occupancy and modification of floodplains and with the loss or modification of wetlands and other types of riparian.

W-W FP Goals page 4-2 Wildlife - To provide habitat for viable populations of all existing native and desired nonnative vertebrate wildlife species and to maintain or enhance the overall quality of wildlife habitat across the Forest. W-W FP Goal page 4-22, Watershed - To maintain or enhance the unique and valuable characteristics of riparian areas and to maintain or improve water quality,

streamflows, wildlife habitat, and fish habitat. Design and conduct all management activities in all streamside management units to maintain or improve water quality and associated beneficial uses in SMU Class 1 and 2 streams.

Wild and Scenic Snake River Recreation Management Plan-The number a diversity of wildlife species that inhabit the Wild and Scenic corridor of the Snake River establishes its importance as wildlife habitat. The area incorporates significant migration, wintering and year-round habitat for numerous wildlife species and provides opportunities for human interactions with these creatures. Wildlife and wildlife habitat are outstanding remarkable values of the Snake River Wild and Scenic corridor.

The Snake River canyon contains populations of MacFarlane's four-o'clock, a federally listed species by the U.S. Fish and Wildlife Service occurring on National Forest System lands. In addition, four species which are candidates for listing also occur in the canyon. Ten species are considered Forest Service sensitive and a total of 19 are either rare or endemic to the canyon. Few locations in the Pacific Northwest, or western North America, equal the Snake River canyon in the concentration and number of rare plant or endemic species. The vegetation/botanical resource of the Wild and Scenic Snake River is an outstandingly remarkable value.

D. Information Needed to Analyze the Issue/Question

Cursory examinations suggest that more intact corollary ecologies continue to exist on the lower Salmon and maybe the Imnaha Rivers.

Some species that may be most impacted include:

- wintering waterfowl, particularly common and Barrow's goldeneye and perhaps harlequin
  ducks (winter residents feeding on submergent flora and invertebrates in the shallow water, 0-20 feet)
- tiger beetles, a specialist predator of open sand bars and all its prey assemblages
- *Pristinicola hemphill,* Pristine springsnail
- *Cryptomastix populi*, Cotton oregonian (snail)
- *Megomphix leutarius*, Oregon megomphix (snail)
- *Orehelix sp.nov.*, Hells Canyon mountain snail
- *Orehelix junii*, Grand Coulee mountain snail
- *Orehelix strigosa*, Rocky mountain snail
- *Radiodiscus abietum*, Fir pinwheel (snail)
- *Malthodes glyphidius*, Cantharid beetle

The questions revolve around the zone of impact, what the attendant species and ecologies are, and what is the scale of impact, population viabilities, and where there are collary populations that may be more secure.

E. Existing Data

F. Data Gaps/Study Needs

Describe the changes (losses or gains) in habitat, effects on special emphasis species, endangered and threatened species, and sensitive species.

G. Study Methodology/Modeling Application

Descriptive changes, habitat acres effected (lost or gained).

H. Proposed IPC Studies

None known at this time.

I. Integration with Other Forest Service Issues

Aquatic and recreation.

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

Change in complex operations to maintain and/or improve the habitats affected.
Improvement projects to replace, maintain and/or improve the affected habitats and species.

M. Comments/Notes

Updated August 20, 1998 Kevin Martin
Edited by Myrna L. Evans 8/27/98, 9/22/98, 10/15/98

Document #18, continued

HELLS CANYON COMPLEX RELICENSING
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

A. Issue Statement (Recreation Effects)

The potential effects of recreation on PETS species and other wildlife/botanical resources.

B. Geographic Scope of Concern

River corridor and reservoirs, upland recreation use associated and/or induced by the Hells Canyon Complex.

C. Forest Service Management Direction

Hells Canyon National Recreation Area Act, section 7.

Payette - FP Goal page IV-25, Wildlife - Provide a variety and diversity of habitat throughout the Forest to support viable populations of all native vertebrate. Payette - FP Goal page IV-25, Wildlife - Provide necessary habitat and population for rare plant species. Payette - FP Goal page IV-91, Riparian-Manage riparian areas to maintain or improve riparian-dependent resources. Payette - FP Objectives page IV-91, Riparian - Maintain natural complexity and high relative productivity of riparian soils. Maintain capability of riparian soils and vegetation to act as an effective buffering zone for sediment and other potential water pollutants from upslope activities. Maintain and/or provide structural integrity of riparian areas to moderate flooding and minimize erosion. Assure that land-disturbing activities in adjacent areas are conducted and mitigation is applied, in a manner which minimizes the quantities of eroded material delivered to riparian areas. Maintain streambanks, streamside vegetation vegetation, especially, streambank trees, embedded organic material, and large rock in a stable condition to provide habitat for fish. Provide for recruitment of large woody debris to maintain stream stability and fish habitat. Maintain or enhance the hiding and thermal cover qualities of forested riparian areas, emphasizing the preservation of riparian hiding cover adjacent to mineral licks , wallows, and calving or fawning areas, and the preservation of hiding and thermal cover along riparian travelways. Maintain or enhance the nesting and rearing habitats within riparian areas for all species of birds, giving priority to the preservation of old growth in riparian areas for cavity-dependent species. Maintain riparian successional stages, giving priority to the natural pattern of fire and disease dependent stages. Construct and manage structures and improvements in, and adjacent to, streamcourses in manner whereby the risk of sedimentation from channel erosion or structure failure is commensurate with water quality standards and downstream values. Avoid long and short-term adverse impacts which may be associated with the occupancy and modification of floodplains and with the loss or modification of wetlands and other types of riparian.

W-W FP Goals page 4-2 Wildlife - To provide habitat for viable populations of all existing native and desired nonnative vertebrate wildlife species and to maintain or enhance the overall quality of wildlife habitat across the Forest.

Wild and Scenic Snake River Recreation Management Plan-The number a diversity of wildlife species that inhabit the wild and scenic corridor of the Snake River establishes its importance as wildlife habitat. The area incorporates significant migration, wintering and year-round habitat for numerous wildlife species and provides opportunities for human interactions with these creatures. Wildlife and wildlife habitat are outstanding remarkable values of the Snake River wild and scenic corridor.

The Snake River canyon contains populations of MacFarlane's four-o'clock, a federally listed species by the U.S. Fish and Wildlife Service occurring on National Forest System lands. In addition, four species which are candidates for listing also occur in the canyon. Ten species are considered Forest Service sensitive and a total of 19 are either rare or endemic to the canyon. Few locations in the Pacific Northwest, or western North America, equal the Snake River canyon in the concentration and number of rare plant or endemic species. The vegetation/botanical resource of the Wild and Scenic Snake River is an outstandingly remarkable value.

Pacific Bald Eagle Recovery Plan, US Fish and Wildlife Service, August 25, 1986.

Pacific Coast Recovery Plan for the American Peregrine Falcon, US Fish and Wildlife Service, October 12, 1982.

Mirablis macfarlanei, MacFarlane's Four-O'clock Recovery Plan, US Fish and Wildlife Service, March 27, 1985.

D. Information Needed to Analyze the Issue/Question

1. What is the increased recreation tied to the impoundments and what are the affects on wildlife resources?
2. How has the changed season of use (floating) below Hells Canyon Dam affected wildlife use?
3. How has the road construction, maintenance and increased use and access associated with the changed recreation uses affected the wildlife species using the area?
4. How has the creation of project associated communities changed/effected wildlife species use of the area?
5. How has the increased disturbance and harassment associated with the recreation activities changed species use of the area?

E. Existing Data

F. Data Gaps/Study Needs

There is a need to review specific IPC study plans to evaluate if issues are being addressed.

Studies appear to be only concentrating on listed species of wildlife or those where information is already being gathered, need to assure all listed, sensitive and special emphasis species are being studied.
Describe the changes (losses or gains) in habitat, effects on special emphasis species, endangered and threatened species, and sensitive species.

G. Study Methodology/Modeling Application

Descriptive changes, Habitat Effectiveness Index (HEI), Historic Range of Variability (HRV), habitat acres affected (lost or gained).

H. Proposed IPC Studies

8.2.31 Effects of Human Recreational Activities on Nesting Peregrine Falcons in the Hells Canyon Study Area (will be incorporated into study 8.5.4)
8.2.32 Effects of Human Recreational Activities on Wintering Bald Eagles in the Reservoir Reaches of Hells Canyon Study Area (will be incorporated into study 8.5.4)
8.2.33 Effects of Human Recreation Activities on the Distribution and Relative Abundance of Townsend's Big-Eared Bats and Spotted Bats in the Unimpounded Reach of the Hells Canyon

I. Integration with Other Forest Servise Issue

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

1. Changes in complex operations to maintain and/or reduce recreation effects on reservoirs.
2. Changes in complex operations to maintain and/or reduce recreation effects below Hells Canyon Dam.
3. Road management to change effects.

M. Comments/Notes

Updated August 20, 1998 Kevin Martin
Edited by Myrna L. Evans 8/27/98, 9/22/98, 10/15/98

Document #18, continued

HELLS CANYON COMPLEX RELICENSING
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ASSESSMENT

A. Issue Statement (PETS Species)

The potential effects of all the above on the following PETS species and other species of concern.

PETS Species:

Birds:

Bald Eagle	**Threatened**
Peregrine Falcon	**Endangered**
Ferruginous Hawk	**R-6 sensitive**
Sage Grouse	**R-6 sensitive**
Sandhill Crane	R-6 sensitive
Long-billed Curlew	R-6 sensitive
Upland Sandpiper	**R-6 sensitive**
Tricolored Blackbird	R-6 sensitive
Harlquin Duck	**R-1 and R-4 sensitive**
Black Rosy Finch	R-6 sensitive
Northern Goshawk	**R-4 sensitive**
White headed Woodpecker	**R-1 and R-4 sensitive**
Black backed Woodpecker	**R-1 sensitive**
3-toed Woodpecker	**R-4 sensitive**
Boreal Owl	R-1 and R-4 sensitive
Great Grey Owl	**R-4 sensitive**
Flammulated Owl	R-1 and R-4 sensitive
Mountain Quail	**R-1 and R-4 sensitive**
Columbian Sharp-tailed Grouse	**R-4 sensitive**
Common Loon	**R-1 and R-4 sensitive**
Trumpeter Swan	**R-1 and R-4 sensitive**

Mammals:

Grizzly Bear	Extirpated
Grey Wolf	**Threatened**
Preble's Shrew	R-6 sensitive
Western Big-eared Bat	**R-1, R-4 and R-6 sensitive**
California Wolverine	**R-1, R-4 and R-6 sensitive**
NA Lynx	**R-1, R-4 and R-6 sensitive**
Fisher	**R-1 and R-4 sensitive**
Spotted Bat	**R-4 sensitive**
N.I. Ground Squirrel	**R-4 sensitive**
N. Bog Lemming	R-1 sensitive
Little Pocket Mouse	R-4 sensitive

Plants:

MacFarlane's 4-O'Clock	**Threatened**
Ute's Lady's Tresses	**Threatened**
Geyer's onion	**sensitive**
Hazel's prickly phlox	**sensitive**
Membrane-leaved monkeyflower	**sensitive**
Stalked-leaved monkeyflower	**sensitive**
Spacious monkeyflower	**sensitive**
Oregon bolandra	**sensitive**
Bulb-bearing water hemlock	**sensitive**
Broad-fruit mariposa	**sensitive**
Snake River goldenweed	**sensitive**
Slickspot peppergrass	**sensitive**
Bartonberry	**sensitive**
Spalding's silene	**sensitive**
Western maidenhair fern	**sensitive**
Brandegee's onion	**sensitive**
Sierra onion	**sensitive**
Swamp onion	**sensitive**
Sagebrush mariposa	**sensitive**
Idaho hawksbeard	**sensitive**
Clustered lady's slipper	**sensitive**
Male fern	**sensitive**
Englemann's daisy	**sensitive**
Puzzling halimolobos	**sensitive**
Salmon River lomatium	**sensitive**
Bank monkeyflower	**sensitive**
Least phacelia	**sensitive**
Kruckberg's sword fern	**sensitive**
Wallowa primrose	**sensitive**
Scopose catchfly	**sensitive**
Howell's spectacular thelypody	**sensitive**
Swamp onion	sensitive
Aromatic pussytoes	sensitive
Owyhee milkvetch	sensitive
Low northern sedge	sensitive
Fraternal paintbrush	sensitive
Fee's lipfern	sensitive
Gymnosteris nudicaulis	sensitive
Simple kobresia	sensitive
Northern twayblade	sensitive
Bridge's cliffbrake	sensitive
Small northern bog-orchid	sensitive
Blue Mountain buttercup	sensitive
Inland black goosberry	sensitive
Wolf's currant	sensitive
Farr's willow	sensitive
Porter's butterweed	sensitive
American globeflower	sensitive

Other Sensitive:

Blue Mountain Cryptochian	R-6 sensitive
Spotted Frog	**R-4 sensitive**
C.A. Salamander	R-1 Sensitive

Other Species of Concern:

western toad
Pristinicola hemphill, Pristine springsnail
Cryptomastix populi

W-W FP Regional Forester's Amendment #2 (AKA "Screens")

INFISH Environmental Analysis and Decision Notice

Wild and Scenic Snake River Recreation Management Plan-The number and diversity of wildlife species that inhabit the wild and scenic corridor of the Snake River establishes its importance as wildlife habitat. The area incorporates significant migration, wintering and year-round habitat for numerous wildlife species and provides opportunities for human interactions with these creatures. Wildlife and wildlife habitat are outstanding remarkable values of the Snake River wild and scenic corridor.

The Snake River canyon contains populations of MacFarlane's four-o'clock, a federally listed species by the U.S. Fish and Wildlife Service occurring on National Forest System lands. In addition, four species which are candidates for listing also occur in the canyon. Ten species are considered Forest Service sensitive and a total of 19 are either rare or endemic to the canyon. Few locations in the Pacific Northwest, or western North America, equal the Snake River canyon in the concentration and number of rare plant or endemic species. The vegetation/botanical resource of the Wild and Scenic Snake River is an outstandingly remarkable value.

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Pacific Coast Recovery Plan for the American Peregrine Falcon, US Fish and Wildlife Service, October 12, 1982.

Mirablis macfarlanei, MacFarlane's Four-O'clock Recovery Plan, US Fish and Wildlife Service, March 27, 1985.

D. Information Needed to Analyze the Issue/Question

E. Existing Data

Considerable data exists in agency data bases. (US Forest Service, BLM, Oregon Department of Fish and Wildlife, Idaho Department of Fish and Game, US Fish and Wildlife offices)

F. Data Gaps/Study Needs

There are considerable data gaps relative to many of the species.
BE/BAs will need to be completed on all projects implemented on National Forest System lands, including going through the streamlining process.

G. Study Methodology/Modeling Application

H. Proposed IPC Studies

8.2.3 A Description of the Raptor Community Nesting in Hells Canyon
8.2.5 A Description of the Bat Community in Hells Canyon
8.2.6 Distribution and Abundance of Wintering Bald Eagles in Hells Canyon
8.2.7 Distribution of Nest Sites and Productivity of Nesting Peregrine Falcons in the Hells Canyon Study Area.
8.2.8 A Description of State and Federal Sensitive Wildlife Species in Hells Canyon

8.2.13 Distribution and Abundance of Sage and Sharp-tailed Grouse in Hells Canyon and associated transmission line corridors.
8.2.16 Distribution and Relative Abundance of Mammalian Carnivores and Furbearers in Hells Canyon
8.2.17 Survey of Wolverine Dens in the Seven Devils of Hells Canyon
8.2.18 Nongame Wildlife Habitat Measurements
8.2.20 Habits of Bald Eagles Wintering in Northeastern Oregon and Adjacent Areas of Washington and Idaho
8.2.21 Validation of a Mountain Quail Survey Technique
8.2.22 Movements, Habitat Us and Population Characteristics of Mountain Quail in West-central Idaho: Big Canyon Creek
8.2.25 Effects of Water Level Fluctuations on Threatened and Endangered Species: Bald Eagle (in 8.2.23)
8.2.26 Effects of Water Level Fluctuations on Wildlife Species of Special Concern (in 8.2.23)
8.2.30 Effects of Roads and Transmission Line Corridors on Wildlife Habitat of threatened and Endangered Species and Species of Special Concern
8.2.31 Effects of Human Recreational Activities on Nesting Peregrine Falcons in the Hells Canyon Study Area (will be incorporated into study 8.5.4)
8.2.32 Effects of Human Recreational Activities on Wintering Bald Eagles in the Reservoir Reaches of the Hells Canyon Study Area (will be incorporated into study 8.5.4)
8.2.33 Effects of Human Recreation Activities on the Distribution and Relative Abundance of Townsend's Big-eared Bats and Spotted Bats in the Unimpounded Reach of Hells Canyon
8.2.43 A survey of Suitable Habitat for the Idaho Ground Squirrel
8.3.2 Inventory of Threatened, Endangered and Sensitive Plant Species along the Snake River, Weiser, Idaho to Salmon River
8.3.7 Effects of Water Level Fluctuations Resulting from Operation of the Hells Canyon Complex upon Threatened, Endangered and Sensitive Plant Species
8.3.8 Effects of Roads and Transmission Line Right of Ways on Threatened, Endangered and Sensitive Plant Species

I. Integration with Other Forest Service Issues

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME measures that may lead to terms and conditions of a new license)*

1. Changes in complex operations to improve or maintain PETS species habitats.
2. Changes in area uses to improve or maintain PETS species habitats.
3. Habitat improvements/protection for PETS species.
4. Easements and/or purchases to protect PETS species habitats.

M. Comments/Notes

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Document #19

Hells Canyon Complex Relicensing
Wallowa-Whitman and Payette National Forests

November 6, 1998

INFORMATION NEEDS ANALYSIS

Transmission Lines

A. Issue Statement

Loss of large woody material (LWM) below the transmission lines in intermittent and perennial streams.

Erosion from the transmission line access roads, specifically in the intermittent and perennial tributaries on the plateaus above the river.

Thermal pollution of tributaries caused by transmission line vegetation removal.

Is there a loss of aquatic habitat in tributaries to the Snake River due to culverts on transmission line and facility access roads?

Is management of the transmission lines and access roads consistent with guidance in Forest Plans and amendments?

Questions to Answer

1.Extent and effects of loss of LWM in the tributary channels attributed to the transmission lines.
2. Possibility to reintroduce LWM under the transmission lines.
3. Extent and effects of erosion from access roads.
4. Is the removal of vegetation below transmission lines causing stream temperatures to be altered?

B. Geographic Scope of Concern

Idaho Power Company (IPC) transmission lines across NFS lands

C. Forest Service Management Direction

PACFISH/INFISH
WWNF Forest Plan, Watershed S&G 4-24 #19,20

D. Information Needed to Analyze the Issue/Question

Conduct an inventory of the condition of the transmission access roads on the forest. Determine rehabilitation needs for road sections with drainage, culvert, or erosion concerns. Conduct an inventory of instream LWM for 0.25 miles above and below the transmission corridor. Determine the role of large wood within these channel segments. If inventoried levels of large wood is less than RMOs, determine mitigation needs. Develope a management plan for maintenance of the transmission line corridors and the transmission and facility access roads.

E. Existing Data

Unknown

F. Data Gaps/Study Needs

G. Study Methodology/Modeling Application

Inventory road locations and highlight where roads are within 300 feet of perennial fish-bearing waters, 150 feet of perennial nonfish-bearing waters, and 100 feet of intermittent streams, wetlands, seeps, springs.

Inventory condition of road with respect to erosion and potential maintenance/mitigation needs. Inventory LWM 0.25 miles above and below transmission lines using Region 6 Stream Survey Protocols and PFC method. Determine if addition of LWM is needed.

H. Proposed IPC Studies

None

I. Integration with Other Forest Service Issues

Terrestrial
Bull Trout)

J. Issue Resolution Tracking *(Chronological record of decisions and actions that lead to resolution of issues and/or data gaps/study needs)*

K. Forest Plan Consistency Determination *(Record of consistency of IPC proposals with FS management direction upon completion of data collection and analysis of proposed action)*

L. Potential Protection, Mitigation, and Enhancement Measures *(Potential PME~measures that may lead to terms and conditions of a new license)*

Maintenance of access roads Closure and obliteration of roads not needed for transmission line access Placement of LWM under transmission lines

M. Notes/Comments

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Edited: 6/16/98, 8/12/98
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Edited by Myrna L. Evans 10/15/98